

Additional 17 nos of health care centre required in the master plan area for the increase population upto the year 2041.

**TABLE NO-47**  
**List of Nursing Homes in Tinsukia**

Sl. No.	Name of Nursing Home	Ward No. & Village
1	Dey's Nursing Home	15
2	R. C. Agarwal Nursing Home	5
3	City Nursing Home	12
4	Lifeline Hospital	6
5	Pinewood Nursing Home	7
6	Borthakur Nursing Home	7
7	Jiban Jyoti Nursing Home	7
8	Bawari Nursing Home	7
9	Biroja Nursing Home	7
10	M R Orthopedic Clinic & Hospital	15
11	Swastik Nursing Home	4
12	St. Luke's Hospital	Patia Pathar No. 1



**Borthakur Nursing Home**



**Life Line Hospital**



**Jeevan Jyoti Nursing Home**



**Pinewood Hospital**

**Additional 2 nos of nursing home & 5 nos of multi -specialty hospital required in the master plan area for the increase population upto the year 2041. The plan also proposes upgradation of ESI hospital.**

#### **URDPFI guideline for health care facilities**

In the health care facilities, the size of a hospital depends upon the hospital bed requirement, which in turns is a function of the size of the population it serves. As per URDPFI guideline the calculation of number of beds is based on: -

A) Annual rate of admission as 1 per 50 population

B) Average length of stay in a hospital as 5 days.

Since the projected population for Tinsukia master plan up to the year 2041 is 446108, as such, the number of beds required for the said population is :-

- i) No. of beds days per year =  $(446108 \times 1/50) \times 5 = 44610$   
 ii) No. of beds required with =  $44610 / 365 = 122$   
 100% Occupancy

The classification of healthcare facilities as URDPFI guideline is given in the following table: -

**TABLE NO-48**  
**Healthcare Facilities**

Sl. No.	Category	No. of Beds	Population served per unit	Area Requirement
1	Dispensary	-	15000	0.08 to 0.12 Ha
2	Nursing home, Child Welfare & Maternity Centre	25 to 30 beds	45000 to 1.00 Lakhs	0.20 to 0.30 Ha
3	Polyclinic	Some observation bed	1.00 Lakhs	0.20 to 0.30 Ha
4	Intermediate Hospital	200 Initially the provision may be for 100 beds including maternity beds	1.00 Lakhs	Total Area = 3.7 Ha. i) Area for hospital = 2.70 Ha. ii) Area for Residential Accommodation = 1.00 Ha.
5	Family Welfare Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
6	Diagnostic Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
7	Rehabilitation Centre	-	-	As per requirement

This plan suggests to take appropriate measures by the health department for the provision of 7 nos. of dispensaries at various location within the master plan area covering an area of 0.08 – 0.12 hectare per dispensary serving at least 15,000 persons. This plan also suggests to set-up a family welfare centre to serve at least 50000 persons by the health department and also a Re-habilitation centre by the Govt. or by any NGO for the up liftmen of deprived class of the community.

### 6.2.3 Parks / Recreation Spaces & Burial Ground

Parks, playground and recreational space plays an important role in providing a healthy and balanced urban living environment. It provides space for physical and mental health development and social harmony. The Tinsukia master plan has Marut Nandan Kanan (Na-pukhuri), Tinkunia park, Puja mandir park, *Bishnu Rabha Park*, Piyoli Phukan park, Gandhi Park and TDA lake for recreational activities.



*Marut Nandan Kanan (Na-pukhuri)*

There are 3 (three) indoor stadiums viz. Kachujan Stadium at Kachujan field, TDA Indoor Stadium at Napukhuri & Raliway Indoor stadium at Hijuguri giving ample opportunities for development of indoor sports. Culturally vibrant Tinsukia have also a numbers of community halls and social-cultural institutions. In master plan area, there are 3 (three) outdoor stadiums viz. Sarbananda Singha stadium situated by the side of Juria-Namghar path, Kachujan stadium situated near Tinsukia college adjacent to Gelapukhuri road and another in Hijuguri area are taking care of sports activities of Tinsukia urban agglomeration. In addition to the above, there are 6 playgrounds in urban area and 18 playgrounds in rural area. The youth of this region is advanced in sports due to their inborn physical qualities.

In Tinsukia master plan area the existing land use for recreational purposes is 88.95 hectares i.e., 2.12 % of the total developed area. In the proposed Land use plan for recreation purposes increase to 670.45 hectare i.e., 9.36 % of the total developed area keeping in mind the increase of population up to the year 2041. The plan proposes 2 (two) playgrounds and 6 (six) parks in the in the master plan area.



*Sarbananda Singha Stadium*



*Kachujan Field*



*Indoor Stadium*

Details regarding Shamshan & Burial ground :-

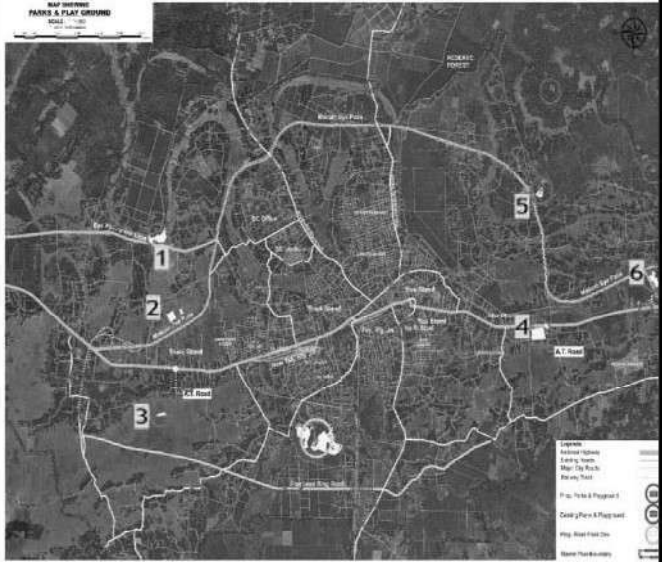
Sl.No	PARTICULARS	URBAN AREAS (NOS)	RURAL AREA (NOS)	PROPOSAL
1.	SHAMSHAN ( CREMATION)	4	10 (Note:- Also every tea Garden having own cremation ground)	1 (Rural) at Bahbari Gaon (CT) TPS Scheme / Dev. Scheme
2.	KABRISTAN (BURIAL )	2		
3.	CHRISTIAN CEMETERY	1	1	

The below photo shows existing recreation facilities and proposals :-

Sl.No	PARTICULARS	URBAN AREAS (NOS)	RURAL AREA (NOS)	PROPOSAL
1.	STADIUM (OUTDOOR)	3	-	-
2.	STADIUM (INDOOR)	3	-	-
3.	PLAY GROUND	6	18	2
4.	PARKS	6	-	6 (Rural)

Sl. No	PROPOSED PARKS Name of Cadastral Map / Area	No. of parks
1	Okanimuria Kachari Gaon under TPS	2
2	Okanimuria Bangali gaon under TPS	1
3	Dimoruguria gaon under neighbourhood	1
4	Sukan pukhuri TE patta land	1
5	Disawjan Gaon	1
6	Sukan pukhuri 37-73 NLR part 2 center	1

The map is an aerial photograph with a grid overlay. It shows a network of roads and agricultural fields. Six locations are marked with numbered circles: 1, 2, 3, 4, 5, and 6. A legend in the bottom right corner identifies symbols for 'Park & Play Ground', 'Water Body', 'Road', 'Railway', 'Boundary', 'Settlement', 'Forest', 'Barren Land', 'Water Body', 'Settlement', 'Forest', 'Barren Land', 'Water Body', 'Settlement', 'Forest', 'Barren Land'. The map also includes a scale bar and a north arrow.



## **CHAPTER - 7**

### **7. ENVIRONMENT, TOURISM AND CITY BEAUTIFICATION PLAN**

#### **7.1 Description of eco-friendly / Heritage areas –**

There are many eco-friendly/heritage sites in Tinsukia which became the pride of Tinsukia.

This Indian Railway Heritage Park cum museum has become one of the attractions for the people as it provides information about the rich heritage and history of India as well as North-East Frontier Railway. This museum has been designed to preserve and exhibits a diverse collection of railways. This museum acts a vital source of information and helps to educate people particularly children about the rich heritage of Indian History of Railway as well as North-East Frontier railway. It comprises of centuries old trains ranging from Britain built original turn table manufactured in 1892, railway wheels used by the US Army during the 2<sup>nd</sup> World War. Besides being historically rich, the heritage park consists of a toy-train which offers joy rides to visitors and a mini railway station which is set-up to show case people the rich legacy of North-East Frontier Railways.



***Indian Railway Heritage Park cum museum (Tinsukia)***

Napukhuri & Marut Nandan Kanan situated at Tinsukia-Duliajan Rd (LBT) Tinsukia is the biggest attraction of the town. This is a group of 9 (nine)

ponds on the periphery of the town. This historical pond was dug in the period of King Sarbananda Singha.



***Na-pukhuri***



***Beng Pukhuri***



***Tinikunia Pukhuri***

Dibru Saikhowa National Park is located just 13 Km from the heart of Tinsukia town. The river Brahmaputra is surrounding the national park. Various animals including aquatic animals, *white-winged wood ducks*, *water-buffalos*, *wild horses*, *tigers* and *capped langurs* are found in the park.



***Dibru-Saikhowa National Park***

Maguri Beel also known as Maguri Motapung Beel is approx. 9 km away from Tinsukia town. Maguri Motapung Beel (also known as Maguri Motapung Bill, Maguri Bill and Maguri Beel) is a wetland and lake located near to Dibru-Saikhowa National Park and Motapung village of Tinsukia district in Assam. Maguri Motapung Beel serve as natural home to wildlife and provide a source of livelihood to the local communities. Maguri is the local term for walking catfish and Motapung is the name of the nearby village.



**Maguri Beel**

Panitola Bor Namghar of 1803 is oldest and historical namghar and 5km away from Tinsukia town.

Bell Temple (Tilinga Mandir) is 14 Km away from Tinsukia town. The Bell temple is a major attraction for the devotees and tourists. It is dedicated to lord Shiva. It is also known as Tilinga Mandir where a huge Banyan tree once stood in the complex is tied all over with pretty bells by devotees.



**Bell Temple (Tilinga Mandir)**

Borjan Bherjan Wildlife Sanctuary is 5 km from the heart of Tinsukia town. It is a popular tourist attraction. Various species of animals including species like *hoolock gibbon*, *stump tailed macaque*, *capped langur*, *common macaque* and *slow loris* can be found here.



**Borjan Bherjan Wildlife Sanctuary**

### 7.2 Plan/Measures for protection and conservation of environmentally- friendly zones.

Being environmentally friendly simply means having a lifestyle that is better for the environment. It's all about taking small steps towards mother earth so as to make this planet a better place for our communities and generations to come. A good way would be to start with conserving water, driving less, walking more, consuming less energy, buying recycled products, eating locally grown vegetables, joining environmental groups to combat air pollution, producing less waste, planting more trees and many more. The more that we do on our part the faster we will create an environment of living that promotes sustainability. People of the town who are committed to conservation and preservation of resources should encourage options like community play grounds, public transportation, green construction and work to change the way that fossil fuels and other resources are used to support community services.

This plan suggests following proposals for protection and conservation of environmentally friendly zones-

- (i) People of Tinsukia urban area should join hand with environmental groups to protect the town and make the environment clean and green.
- (ii) Reduce, reuse, recycle waste hierarchy is the order of priority of actions to be taken to reduce the amount of waste generated and to improve overall waste management processes and programs.
- (iii) Plantation habit should be grown up among the people. For this necessary awareness camp should be organized by competent authority for conservation of natural resources and composting system.
- (iv) Steps should be taken by the authority to stop people from littering on roads. Instead, educate them to put trash and garbage in dustbins. The pile of garbage on road hampers the beauty of the city and also pollutes the air.
- (v) Steps should be taken by the concerned authority to reduce the emitted hazardous chemical and gases in industrial activities.
- (vi) Steps for afforestation in urban areas along TDA drain & water retention tank for conservation of water in context of sponge city concept.



**Plantation habit**



**Reduce, reuse, recycle waste**

### 7.3 City Beautification Plan/ Park & recreational proposals: --

To improve town's appearance and aesthetic view, neighbour hoods often try to update what is known as streetscape, which pertains to the area between the driving lanes and the edge of the private property. Partly this is a popular strategy because it is public space and it's easy for the government to

dictate what will happen there. In truth, streetscape can be quite effective in uniting block faces or a series of blocks that are discordant in some way, because streetscape often includes plantings, the effect is to soften the view created by streets and hopefully sidewalks. Care in the choice of materials and in the quality of the installation makes all the difference in this form of beautification.

In addition to streetscape, sometimes we need a focal point. This might be public art and open-air theatre, fountains, a clock tower or grouping of tall grasses. If we already have a lonely statue or old historical building with nothing around it, maybe we should add planting beds of considerable size, an inviting bench or two, and maybe an interpretive sign explaining the rest of the story. A tree planting project, either on a vacant plot, in a park, or in the parkway between the side walk and the street is great for improving Towns appearance over the course of a few years at a relatively low cost. Voluntary schemes should be taken up by neighbourhood basis for cleaning up the park of the town.



**City beautification**

The plan proposes for parks and recreational areas in the Tinsukia master plan as mentioned below: -

**Table No 48 (A)  
Proposed Parks Areas**

Sl.No	Name of Cadastral Map / Area	No. of parks
1	Okanimuria Kachari Gaon under TPS	2
2	Okanimuria Bangali gaon under TPS	1
3	Panitola gaon	1
4	Sukanpukhuri 37-73 NLR part 2	1
5	Sukanpukhuri TE patta land	1
6	Disawjan Gaon	1
7	Dimoruguria gaon under neighbourhood center	1

**Table No 48 (B)  
Proposed Recreation Areas**

Sl.No	Name of Cadastral Map / Area	No. of parks
1	Itakhuli grant no 250 NLR & Tingrai Habi gaon	1
2	Nakhrai bangali & Nakhrai TE 162-159, 144-145 NLR	1



#### **7.4 Roadside Plantation-**

The main object of road side plantation is to provide protection to road, traffic, check soil erosion, food, fuel, fodder and timber to the society and mitigate climate change issues. Plantation is durable assets that produce fruits and raw-materials for agro based industry, and also generate livelihood after 7 to 10 years.

This plan suggests the social forestry department to prepare project on road side plantation with details of road to be covered, length of road and species of plants to be planned with numbers of plants for entire Tinsukia master plan area.

Plantation of fruit bearing plants, suitable to local agro-climatic condition should be done in every area of the master plan. The authority concern should take steps for organizing camp and awareness program for road side plantation and educate the people about the benefits of road side plantation including its impact on city's landscape.



**Roadside plantation**

#### **7.5 Urban Agriculture and Urban forestry.**

Urban agriculture is the new culture that is catching up in emerging cities. Since the population growth rate is very high, natural resource to feed the increasing population in coming days is a challenging task ahead. So, urban agriculture has been seen as big solution to the problem.

Urban forestry is the careful care and management of tree in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban forest function is thus often oriented toward human outcomes, Such as shade, beauty and privacy. Urban forests bring many environmental and economic benefits to town. Among these are energy benefits in the form of reduced air conditioning, reduced heating by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air and reducing wind speed.

So, urban forestry scheme should be taken by competent authority for afforesting degraded forest land in the Tinsukia Master plan Area. This type of scheme will act against climate change by creating a carbon sink and against air population in the town. This plan also suggests for starting tree surveys in the town which can be conducted by NGO and college or school students. A



plan should be framed to create small nurseries in Govt. school as well as in private institution where there is extra space.



**Urban agriculture**



**Urban forestry**

### **7.6 Public Rain Water Harvesting Scheme**

Rainwater harvesting is a process involving collection and storage of rain water that runs off natural or man-made catchment areas, e.g. roof top, Compounds, rock surface or hill slopes or artificial repaired impervious/semi-pervious land surface.

Due to deforestation and the consequent ecological imbalance, the ground water level is going down day by day. The constant rising demand of water supply especially from the urban areas does not match with the surface water sources, as a result of which the water reserves beneath the ground level are over exploited. This consequently results in the water level depletion.

Water harvesting apart from recharging the ground water level, increases the availability of water at a given place at a given point of time. It also reduces the power consumption. It further reduces the run off which chokes the storm water drains artificial flooding, chances of soil erosion and improves the quality of water. The plan suggests rain water harvesting scheme to be implement by a competent authority. Moreover, the urbanization trend reduces the infiltration rate of rain water into the sub-soil there by reduces ground water recharging.



**Rainwater harvesting**

**URDPFI guideline for parks and recreation spaces**

The provision of socio- cultural facilities shall correspond to the changing urban demography and work life style.

**TABLE NO-49**  
**Norms For Socio- Cultural Facilities**

Sl.No	Category	Population Served per unit	Land Area Requirement (Sq.m)
1	Aganwadi- Housing area / Cluster	5000	200-300
2	Community Room	5000	750
3	Community hall / Marriage Hall/ Library	15000	2000
4	Music, dance and drama centre	1 Lakh	1000

**TABLE NO-50**  
**Norms For Recreational Facilities**

Sl.No	Category	Population Served per unit	Area Requirement (Ha)
1	Housing Area Park	5000	0.50
2	Neighbourhood Park	15000	1.00
3	Community Park	1 Lakh	5.00

**TABLE NO-51**  
**Norms For Sports Facilities**

Sl.No.	Category	Population Served per unit	Area Requirement ( Sq. M )
1	Residential unit play Area	5000	5000
2	Neighbourhood Play Area	15000	1.5
3	Town sports centre	1 Lakh	8.00

**7.7 Beautification of Major Transit Zone**

Tinsukia has emerged as a major transit zone for tea, iron & steel, electrical appliances, vegetables, etc. Tea of Tinsukia transit to all over India. So, it is very much essential to beautify and upgrade the major traffic points like bus stand, railway station, market area of this emerging transit zone of upper Assam.

**7.8 Road Signage and Street Furniture**

Road signs are signs erected at the side of or above roads to give instruction or provide information to road users. The earliest signs were simple wooden or some milestones. But in course of time, many states of India have been adopting pictorial signs or otherwise simplified and standardized their

signs to overcome language barriers and enhance traffic safety, such pictorial signs use symbols in place of words.

Street furniture is a collective term for objects and pieces of equipment installed on streets and roads for various purposes. It included Benches, traffic barriers, bollards post boxes phone boxes, street lamps, traffic lights, traffic signs, bus stops, taxi stand, public lavatories fountains, public sculptures and waste receptacles an important consideration in the design of street furniture is how it affects road safety. Road signs and furniture's are inadequate, not predominantly visible.

The plan suggests the authority concern to take steps for the installation of warning, priority, prohibitory, mandatory, information, facilities, service, direction, position and indication signs in the roads of Tinsukia town, so that local people as well as outsiders can be benefitted and road safety can be maintained.

Further, master plan area does not have visible street furniture for the public. The concern authority should take steps for the construction of public lavatories at important public places and installation of benches in the park and public places, post boxes, bus stop, taxi stand, waste collectors etc. in addition to the existing ones.

This plan recommends for preparation and execution of a city beautification plan covering street light, traffic signal etc. that will enhance the beauty of this resource full town.



**Road signage**



**Street furniture**

## **7.9 River Centric Planning**

The river Tingrai located in southern part of Tinsukia master plan. There is a need for new thinking for 'River towns. There is need for the residential of these towns to ask "what can we do for the rivers?" Hearing from experiences of Namami Brahmaputra, it is seriously felt that a new river centric thinking in planning for towns situated on the banks of rivers is the need of the hour. The river health needs to be mainstreamed into urban planning process by development of Urban River Management Plans. Towns should be responsible for rejuvenating their rivers. It has to be done not just with the regulatory mindset but also with development and facilitatory outlook.

### **7.9.1 Abstract**

Most of the towns in Assam are river centric and Tinsukia is not exception of that, which signifies that the interactions between an urban center and its rivers are complex, reciprocal and collaborative. With urbanization and unplanned extraction of resources, it has been observed that the river's morphology has been changed, thus plummeting its capacity to

deliver ecosystem services, further adding excess runoff and diffuse pollution loads. On the other hand, river floods can damage the town in return. The floods had major short as well as long term impacts on the lives of people residing in the affected areas.

Nevertheless, there are potential aids in both directions. By good management and strict guidelines, a town with its residents can achieve increased land values, acceleration in economic efficiency, recreational aesthetic worth which can increase further environmental sustainability of the town with the development of the river system.

### 7.9.2 Introduction

The river Tingrai located in southern part of Tinsukia master plan and fall into river Dihing. But due to urbanization and household activities, the river is getting progressively polluted. The pollution load has been increasing over the years with increased volumes of waste water finding their way into them even present solid waste management site also near Tingrai river. The situation is likely to further intensify due to impacts of climate change on the water resources, including river. Further, the flood plains of the river Tingrai mainly in the periphery of urban area also witnessed construction activities including random and unauthorized development which have severely degraded the overall natural environment of flood plains of river Tingrai. In some places in the banks of river Tingrai erosion is creating a problem.



**Tingrai Bridge**

### 7.9.3 Need for Urban River Zone Conservation and mainstreaming it with Urban Planning.

Due to the pressure of urbanization and population growth in Tinsukia, the river front areas of Tingrai are getting degraded in terms of poor water quality, limited access and are often found functioning as effluent water or dumping ground.

Waterfronts have a long history of changing types and levels of uses and are now coming back into potentially thriving and layered public use. As such, the Govt. has taken initiative for river front development to improve the overall riverine environment. Waterfronts can be developed with different functioning and activities like parklands, recreational public place and as a retail or tourist center. Studies also suggest that mixed use development along the waterfront is ideally suitable and beneficial, both for the community and town authorities as it not only provides wide public access to the riverfront but also contribute in the economic development of the town. As such, this plan suggests for the development of riverfront of the river Tingrai by the concerned authority, so that the people of Tinsukia can able to consume the fruit of river Tingrai.



**Durga Puja at River Tingrai, Tinsukia**

#### **7.9.4 Objectives and Purposes of River Centric Planning**

Broad objectives of River Centric Planning and Urban River Management are: -

1. To highlight the need for River Centric Planning and Urban River Management Plans for the guidance of town authority.
2. To attempt a framework for river water conservation and development of river waterfronts.
3. To recommend suitable planning strategies for river water management and river front development as a part of sustainable urban planning and development to transform the riverfront as a place where people can live, work and utilize and give them back the same riverfront through improvements in public access and addition of green spaces along river banks bringing out a multi-purpose riverfront.
4. To recommend development regulations / zoning for river front developments.

Sustainable urban planning and development has to take into consideration that river Tingrai at Tinsukia region requires prioritized attention to ensure that the river is clean, free of any untreated discharge of waste water, erosion free and the flood plains are not only protected from the construction activities but also becomes the hub of recreational activities without compromising the overall natural atmosphere of not only river but of air, sound and wildlife.

#### **7.9.5 “River Zone” and its Regulating Intents**

As per River Centric Master Planning and Urban River Management and Planning guidelines of Ministry of Housing & Urban Affairs, Govt. of India: “The concept of flood plain zoning is to regulate land use in the flood plains to –

- (a) Restrict damage to land surface and built-up developments caused by floods.
- (b) Restrict environmental damages to the river and it’s abutting ecologically sensitive zones arising out of the land-use occupancies in such zones.”

This plan considers the following river regulation zones of Tingrai at Tinsukia depending upon the permission granted to carry out developmental activities.

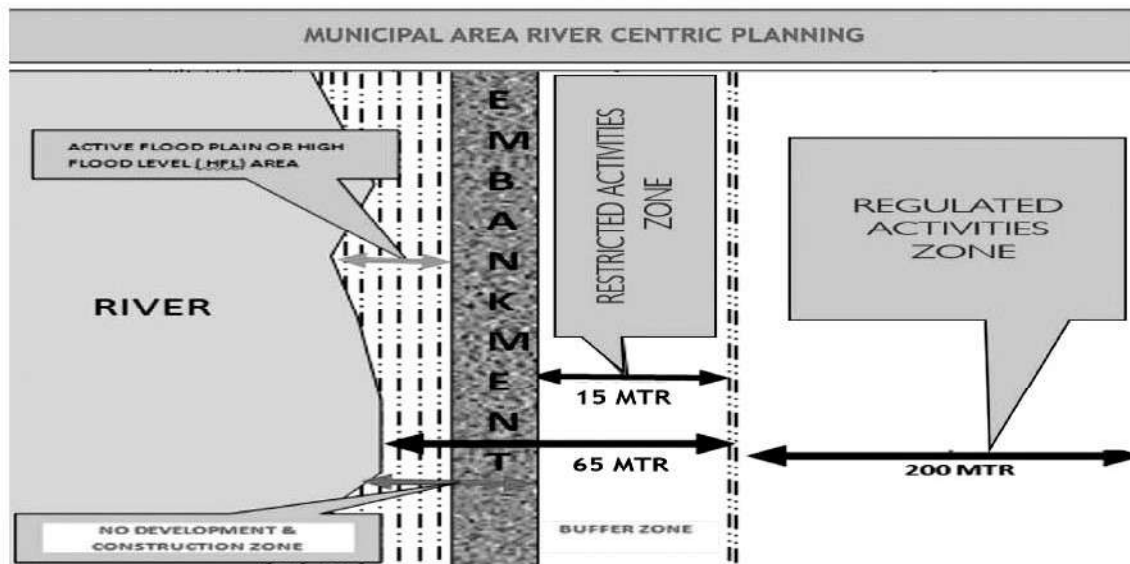
1. **No development Zone and:** *up to 50 meters from the High Flood Line (HFL) in past 50 years NDCZ (No Development and Construction Zone).*
2. **Restricted Activities Zone (RAZ):** This zone is subjected to frequent flooding and most vulnerable with adverse impacts on human activities. In case the presence of embankments in the floodplain area, this zone will extend from the outer side embankment upto 15 m further in municipal area and 50 mtr outside municipal area.
3. **Regulated Activities Zone:** This zone includes the floodplain areas which are less frequently affected by floods and lie further from the river. Its limit extends from the



outer limits of RAZ zone upto 200 m further. Few restricted developments are recommended in alignment with activity recommendations as per zoning regulations.

Figure No : 32 (A)

**RIVER ZONE**



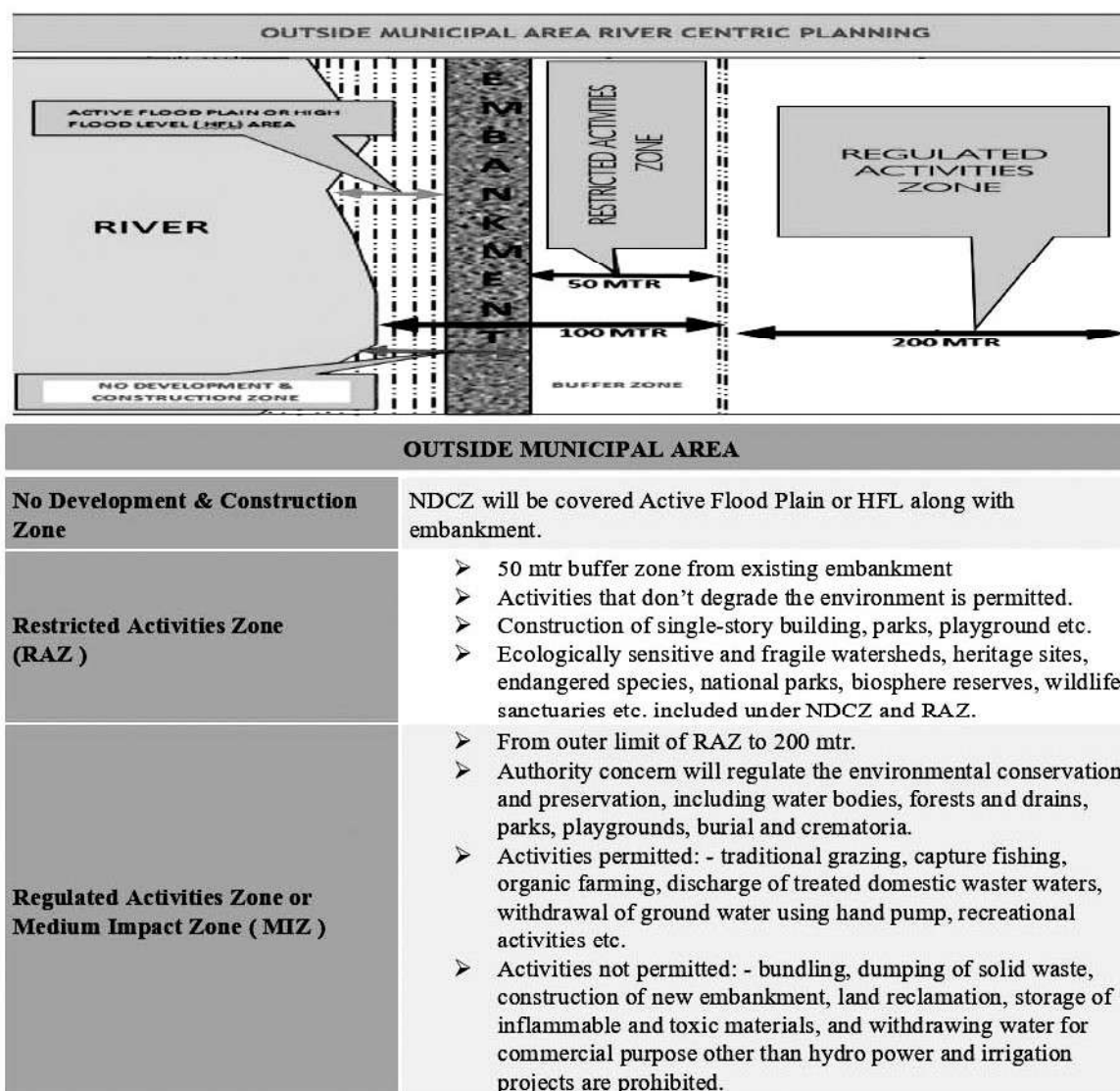
(River Zone of Tingrai river)

MUNICIPAL AREA		
No Development & Construction Zone	NDCZ will be covered Active Flood Plain or HFL along with embankment.	
Restricted Activities Zone (RAZ )	<ul style="list-style-type: none"> <li>➤ 15 mtr buffer zone from existing embankment</li> <li>➤ Activities that don't degrade the environment is permitted.</li> <li>➤ Construction of single-story building, parks, playground etc.</li> <li>➤ Ecologically sensitive and fragile watersheds, heritage sites, endangered species, national parks, biosphere reserves, wildlife sanctuaries etc. included under NDCZ and RAZ.</li> </ul>	
Regulated Activities Zone or Medium Impact Zone ( MIZ )	<ul style="list-style-type: none"> <li>➤ From outer limit of RAZ to 200 mtr.</li> <li>➤ Authority concern will regulate the environmental conservation and preservation, including water bodies, forests and drains, parks, playgrounds, burial and crematoria.</li> <li>➤ Activities permitted: - traditional grazing, capture fishing, organic farming, discharge of treated domestic waster waters, withdrawal of ground water using hand pump, recreational activities etc.</li> <li>➤ Activities not permitted: - bundling, dumping of solid waste, construction of new embankment, land reclamation, storage of inflammable and toxic materials, and withdrawing water for commercial purpose other than hydro power and irrigation projects are prohibited.</li> </ul>	

Source:- River Centric Planning- 2020 & Prop. Zone by T&CP, Dibrugarh



**Figure No: 32 (B)**  
**RIVER ZONE**



#### 7.9.6 Approach to River Zone planning through Master / Zonal Development Plans

The following points to be considered by the competent authority while planning developments in River Zones:

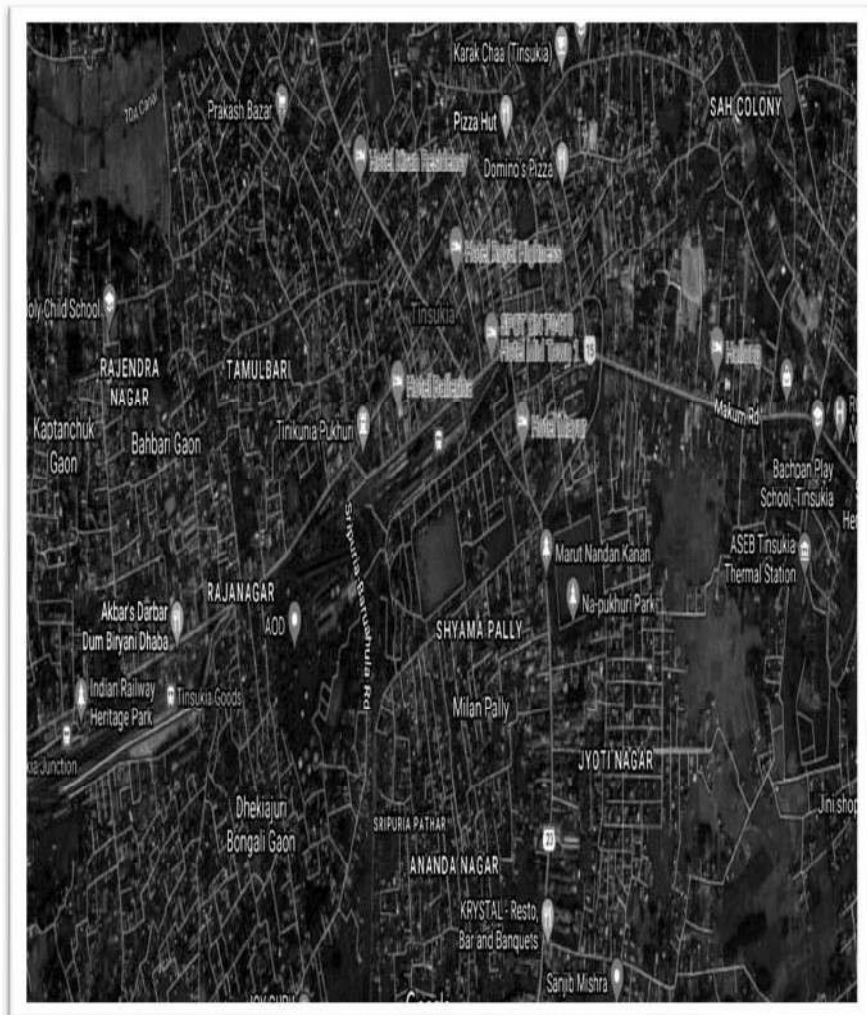
- Proposed development should reduce pollution within the zone and regenerate a healthy environment.
- Any kind of development is to be safe from flooding even at peak flow level.
- The resource requirement be partially mobilized by compatible development of land in the zones without compromising on quality of the environment.
- Identifying the stretches to be developed on priority for being prone to encroachments and do not require large financial resources.
- To mitigate the constraints of land for public and semi-public uses in the adjoin areas / zones.
- Proposed river front development and rejuvenation of adjacent areas for recreation facilities.

**CHAPTER -8****8. LAND USE PLAN****8.1 Developable and Non – Developable Area of the Master Plan**

Urban growth and development are often conditioned by the natural landscape like hills, water bodies, forests and manmade impediments like railway line, major roads & canals etc. It is also conditioned by the resources and technology employed in overcoming the impediments and constraints.

Existing Tinsukia master plan covers only flat land. Except railway track towards Makum and Duliajan, passing through the heart of the town that creates heavy traffic congestion, there is no other physical feature acting as a constraint for development. The soil is very fertile and tea gardens is observed in the region.

The quality of urban life and its functional efficiencies are governed by its land-use pattern. In order to understand and analyze systematically the functional relationship between various uses particularly the place of living, business place, industrial activity, education, recreation, agricultural activity etc., a detail land-use survey was conducted during the year 2021-22 to estimate the present and future need of the urban area as well as master plan area. Tinsukia master plan covers an area of 13689 hectare (136.89 Sq.km), out of which developed area is 4204.53 hectare (42.04 sq.km.) i.e., 30.71 % of the total plan area and non-developed area is 9484.47 hectare (94.84 sq.km.) i.e., 69.28 % of the total plan area.



**8.2 Existing Land Use**

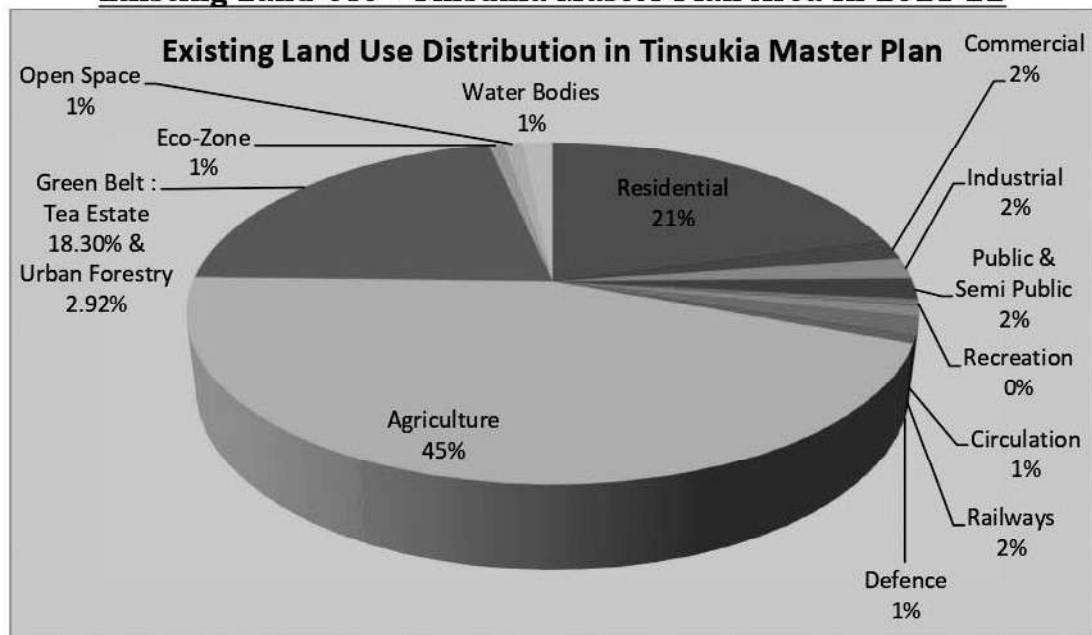
The existing land use and the areas occupied by each use in Tinsukia master plan area is shown in the following table.

**TABLE NO-52**  
**Existing Land Use - Tinsukia Master Plan**  
**Area in 2021-22**

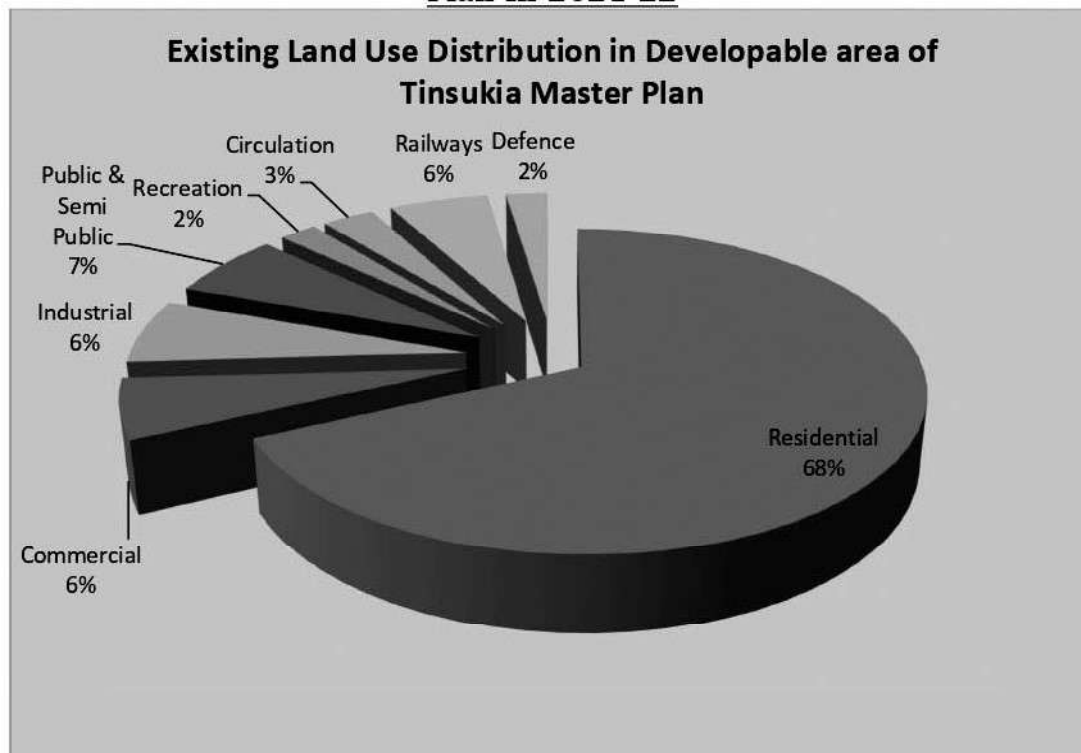
Use		Tinsukia Master Plan Area in hectare 2021-2022	Percentage of the Tinsukia Master Plan Area (%)	Percentage of the total developed Area (%)
Residential		2861.73	20.90	68.06
Commercial		252.81	1.84	6.01
Industrial		271.79	1.98	6.46
Public & Semi Public		271.91	1.98	6.47
Recreation		88.95	0.65	2.12
Circulation		123.93	0.90	2.95
Railways		235.85	1.72	5.61
Defence		97.56	0.71	2.32
<b>Total developed area</b>		<b>4204.53</b>	<b>30.71</b>	<b>100</b>
Agriculture		6115.84	44.68	
Green Belt	Tea Estate	2504.79	18.30	
	Urban Forestry	399.12	2.92	
Eco- Zone	Reserve Forest	110.05	0.80	
Open Space		130.13	0.95	
Water Bodies		224.54	1.64	
<b>Total Un Developed Area</b>		<b>9484.47</b>	<b>69.29</b>	
<b>Grand Total Plan Area</b>		<b>13689 (136.89 Sq.km)</b>	<b>100</b>	

Source: - Town & Country Planning, Dibrugarh Land Use Survey 2021-22.

**Figure-33**  
**Existing Land Use - Tinsukia Master Plan Area In 2021-22**



**Figure-34**  
**Existing Land Use Distribution in Developable Area of Tinsukia Master Plan In 2021-22**



In Tinsukia master plan area, 2861.73 hectare of land i.e., 20.90% of total master plan area or 68.06% of the total developed area, is used for residential purposes. New residential areas have been developed in the last

few years at Jyoti Nagar, Napukhuri, Ward No-4 & TS No-14, Bordoloi Nagar & Ward No-8.

In TMPA, 252.81 hectare of land i.e., 1.84% of total master plan area or 6.01% of the total developed area is used for commercial and business purposes. The business area in Tinsukia is spread all over the town. The main market places are situated at GNB road, NH-15, Rangagora road and Chriwapotty. Vegetable and fruit market located at Thana Road, Ward No-12., in a compact manner. Wholesale grocery market is located at Chamba Road, Siding Bazar, Ward No-11. The roads being narrow, no provision of parking area in market places and on road parking of all types of vehicles including commercial vehicles at all the market places create traffic congestion in the market area.

In TMPA, 271.79 hectare of land i.e., 1.98% of total master plan area or 6.46% of the total developed area is used for industrial purposes.

The land use for Public and Semi-public purposes including educational institutions, government offices, health care etc. are 271.91 hectare, i.e., 1.98% of total master plan area or 6.47% of the total developed area is used for industrial purposes. The land uses under this had is scattered all over the master plan area.

In TMPA, 88.95 hectare of land i.e., 0.65% of total master plan area or 2.12% of the total developed area is used for recreational purposes. Out of this a major portion has been used as Sarbananda Singha stadium, Kachujan field, Marut Nandan Kanan park and Napukhuri. Besides these, there are other open spaces which fulfil the recreational activity of the people of Tinsukia.

Transportation & circulation network of a town or planning area plays an important role and affects immensely the economic and socio-cultural life of the planning area. A well-developed road network can provide answer to many problems of urban life. Accordingly, in TMPA, the land use for circulation purposes is 123.93 hectare, i.e., 0.90% of total master plan area or 2.95% of the total developed area.

Railways occupy an area of 235.85 hectare of land i.e., 1.72% of total master plan area or 5.61% of the total developed area. The railway track is passing all along through the master plan area from Panitola gaon to

Hukanpukhuri 37/73 NLR. The Tinsukia railway station is situated within the heart of the town and New Tinsukia railway junction is situated in Hijuguri area.

In TMPA, Defence occupy an area of 97.56 hectare of land i.e., 0.71% of total master plan area or 2.32% of the total developed area.

In TMPA, land use for agricultural purposes is 6115.84 hectare i.e., 44.68% of the total master plan area. Agricultural activities are mainly taking place in Gelapukhuri, Bojaltoli gaon, Kadomoni gaon, Nokhroi, Nunpuria Bongali gaon, Okonimuria Bongali gaon, Lezaihula gaon, Chikajan, Ahukhat, Chandmari, Bhimpara etc.

Green belt covers an area of 2903.91 hectare i.e., 21.22% of the total master plan area. Out of this tea estate occupies 2504.79 hectare i.e., 18.30% of the total master plan area. There are 15 (fifteen) tea gardens situated all over the master plan area. Urban forestry occupies an area of 399.12 hectares i.e., 2.92% of the master plan area.

Eco zone (reserve forest) occupies an area of 110.05 hectares i.e., 0.80% of the master plan area. The entire forest land in the land-use occupied by Borjan-Bherjan reserve forest.

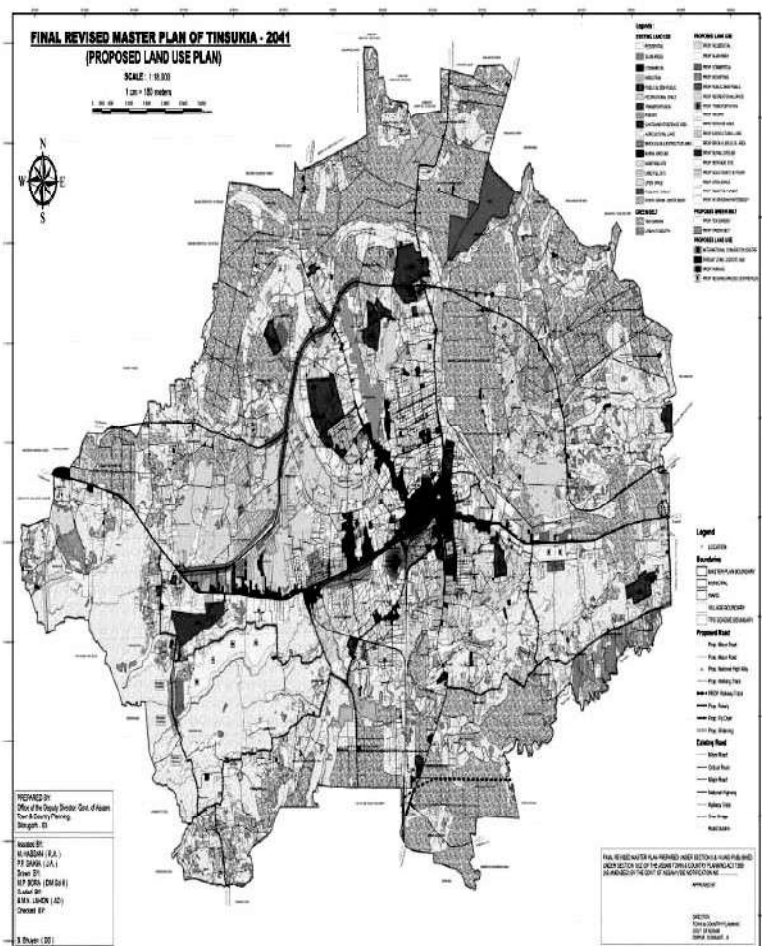
Open space constitutes an area of 130.13 hectare i.e., 0.95% of the total master plan area. Small size open space area is scattered all over the municipal area as well as master plan area. There are 4 (four) big blocks of open space has been seen in Lohari Kachari gaon, near Citrous Research Station, near Police Reserve and in Norsing gaon.

Water bodies constitute an area of 224.54 hectare i.e., 1.64% of the total master plan area. The major constituent of water bodies in the land-use are Tingrai river and TDA drain.

### **KEY ISSUES / SHORTCOMINGS**

- Poor urban traffic management
- Encroachment of Govt land & roads
- Lack of coordination between various Govt agencies and ULB.
- Lack of motivation among ULB employees, lack of proper infrastructure & resources
- Town is growing, services are getting saturated.
- **Sense of belongingness among public is absent.**
- No plan for E- Waste & Medical waste
- Lack of proper infrastructure for fire service & requirement for preventive measures ( fire hydrant)
- Lack of green coverage





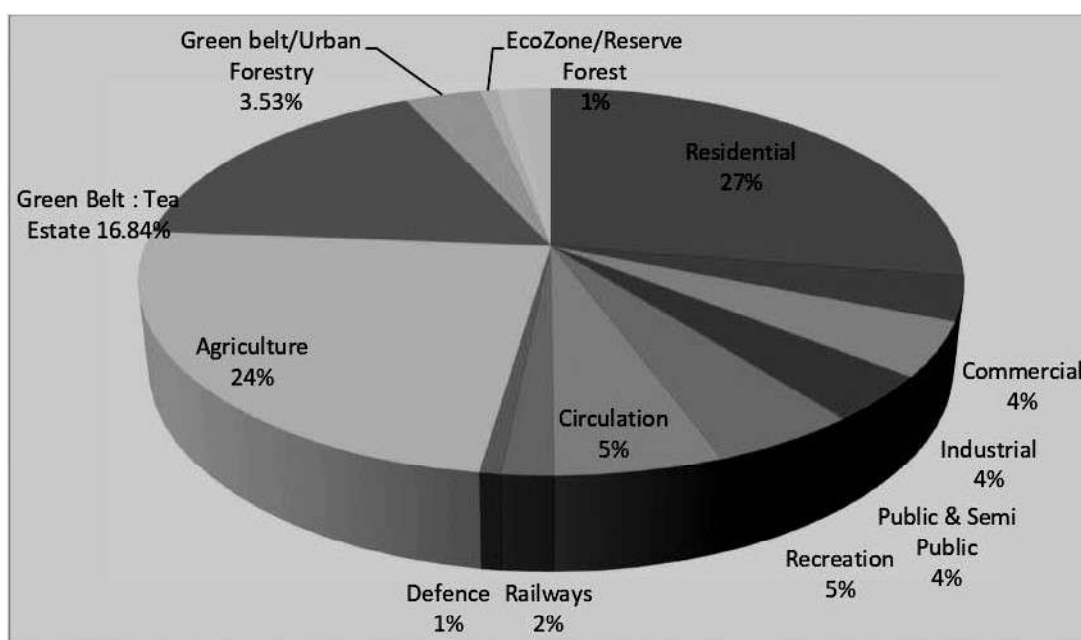
The following table shows the proposed distribution of land use in Tinsukia master plan area up to 2041.

**TABLE NO-53**  
**Proposed Land Use - Tinsukia Master Plan Area Up To 2041.**

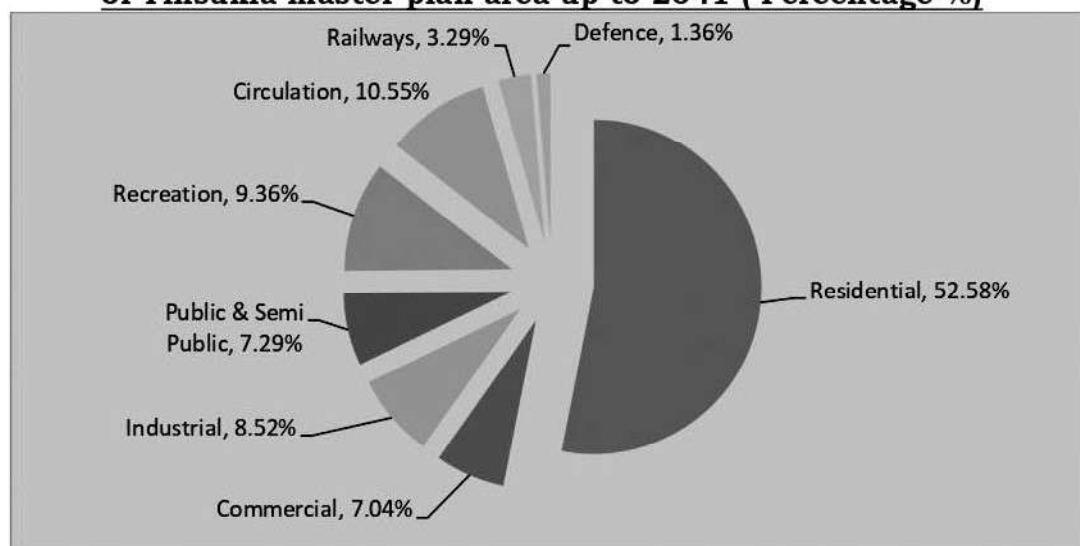
Use		Tinsukia Master Plan Area in hectare	Percentage of the Tinsukia Master Plan Area (%)	Percentage of the total developed Area (%)
Residential		3764.9	27.5	52.58
Commercial		503.76	3.68	7.04
Industrial		610.3	4.46	8.52
Public & Semi Public		522.36	3.82	7.29
Recreation		670.45	4.9	9.36
Circulation		755.36	5.52	10.55
Railways		235.85	1.72	3.29
Defence		97.565	0.71	1.36
Total developed area (A)		7160.545	52.31	100
Agriculture		3281.04	23.97	
Green Belt	Tea Estate	2305.22	16.84	
	Urban Forestry	483	3.53	
Eco-Zone	Reserve Forest	110.05	0.8	
Open Space		130.13	0.95	
Water Bodies		219.02	1.6	
Total Un Developed Area (B)		6528.46	47.69	
Grand Total Plan Area (A+B)		13689	100	
		(136.89 Sq. Km.)		

Source: - Town & Country Planning, Dibrugarh Land Use Survey 2017.

**Figure-35**  
**Proposed land use distribution in**  
**Tinsukia master plan area up to 2041 ( Percentage %)**



**Figure-36**  
**Proposed land use distribution in developable area**  
**of Tinsukia master plan area up to 2041 ( Percentage %)**



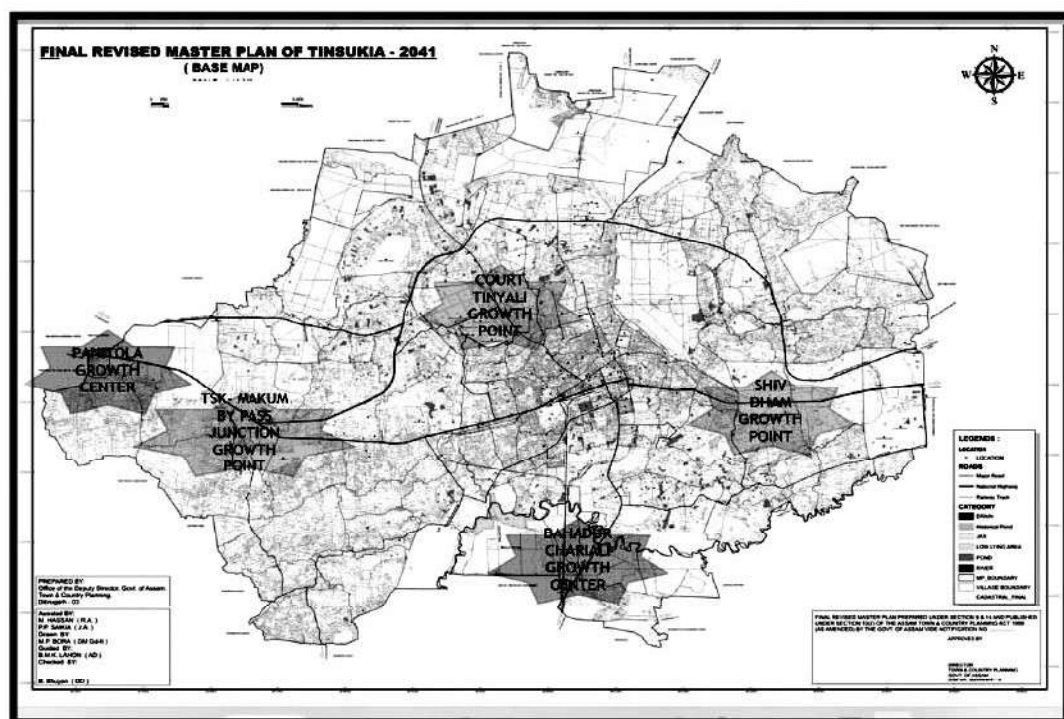
An area of 3764.90 hectare i.e., 27.50 % of the total master plan area or 52.58 % of the total developed area has been earmarked for residential use for projected population of 446108 persons of master plan area up to the year 2041. It is presumed that a part of the total projected population will be residing in the mixed used areas. In the proposed land use plan, the population density of the master plan area in the year 2041 will be 3259 persons per sq.km or 33 persons per hectare. The residential density of

master plan area for the year 2041 will be 23.70 dwelling units per hectare or 118 persons per hectare. The following gross residential density is recommended in the plan:-

1. Low density : up to 75 persons per hectare
2. Medium density : 75 - 150 persons per hectare
3. High density : 150 - 250 persons per hectare

In the propose land use some areas has been identified as future Growth Center & Growth Point as such areas having urban characteristic and accordingly development is under progress therefore proper detail planning is required in the following area :-

1. Growth Center :- Panitola , Bhadur Chariali
2. Growth Point :- Tsk Makum Bypass Junction, Court Tinyali , Shiv Dham



Land earmarked for commercial activities is 503.76 hectare i.e. 3.68% of the master plan area or 7.04 % of the total developed area. In the plan new commercial activities has been proposed along the road side of Tinsukia-Makum Bypass and along the side of major roads. In the plan a ware house has been proposed at Tinsukia-Makum Bypass.

Land earmarked for industrial activities is 610.30 hectare i.e. 4.46 % of the master plan area or 8.52 % of the total developed area. In the plan Solid Waste Management site has been proposed at the present dumping site located near LBT road, No.2 Potia Pathar at Tinsukia-Duliajan road covering an area of 36 Bighas.

In the plan the land earmarked for Public and Semi-public activities is 522.36 hectare i.e. 3.82 % of the master plan area or 7.29 % of the total developed area for establishing Govt. offices, education institution, health services etc. for the growing population. An administrative block has been proposed at the present site of DC office, Tinsukia for all Govt. offices under one roof.

In the plan to meet the demand of growing population, the area earmarked for recreation facilities has also been increased to 670.45 hectare i.e. 4.90 % of the master plan area 9.36 % of the total developed area for establishing parks, outdoor and indoor game facilities and socio-cultural institutions.

In the proposed land use plan, the land earmarked for circulation is 755.36 hectare i.e. 5.52 % of the master plan area or 10.55 % of the total developed area. In the plan new roads has been proposed to link up the sub-arterial and other road to arterial road& widening of all the critical roads in the master plan area. Besides for the efficiency of circulation pattern, ISBT, taxi stand, truck terminus& parking area has also been proposed in the plan.

In the plan, railways occupy 235.85 hectare i.e. 1.72% of the master plan area or 3.29 % of the total developed area of master plan. The land uses for Defence purposes is 97.56 hectare i.e. 0.71% of the master plan area or 1.36 % of the total developed area of master plan.

In the proposed land use plan, an area of 2788.22 hectare i.e. 20.37 % of the master plan area has been earmarked for Green Belt. Out of this 2305.22 hectares i.e. 16.84% of the master plan area covers by tea estate and 483 hectares i.e. 3.53% is proposed for urban forestry. The proposed urban forestry area has been shown in the proposed Land-Use map on Tinsukia-Makum Bypass road. **The plan proposes open space of 130.13 hectare i.e. 0.95 % of the planning area and the plan earmarked open space under the category of no construction zone.** An area of 219.02 hect. i.e 1.6 % of the planning area has been earmarked as water bodies in the proposed master plan map. **The plan proposes 15 mtr buffer zone or no construction zone along natural water channel, ponds, river and wetland inside municipal area and 50 mtr outside municipal area.**

#### 8.4 Composite Zones /Mixed Zones

With increased urbanization, the demand for housing increased manifold. As such, this plan proposes a (1) Town Planning Scheme at Okonimora Kuchari / Okonimora Bongali / Dihingia Gaon (2) /Residential Land Development Scheme / Neighbourhood Centre at 2 (two) locations viz. at (i) Hukanpukhuri TE Pattaland and (ii) Gahoripam gaon/ Dimoroguriya Gaon / Kaptanchuk goan to accommodate 1500 persons or 300 households in each TPS / RLDS locations. The development of this new residential area should be done on the basis of micro/block level planning where all urban problems will be mitigated. The block will covered by small play field with parks for providing recreational facilities to the children of the block. Other facilities included in the scheme are such as 24 hour's electricity and water supply well equipped drainage facilities neighbourhood shopping centre, first aid facilities and provision of kindergarten school.

The land used for Administrative purposes within Tinsukia Municipal Board area is deficient. The existing land area of school and colleges are also for behind the norms. So, this plan proposes to set up an Administrative Block at existing Deputy Commissioner office campus within the master plan area in the interest of public service. In the same way this plan also suggests to increase the land area of school and colleges to reduce the utilization rate by allowing mixed growth.

**CHAPTER - 9****9. Proposed Project, Brief and Tentative Funding Source****9.1 Identify Priority Sectors and Project (Short & medium / long term proposals )**

The plan proposals for Tinsukia Master Plan Area spread up to 2041. It is quite obvious that the natural development will continue and the private developers will play an important role in this respect. However, the private development is encouraged in conformity with the master plan. It is strongly recommended to stop unplanned and sporadic developments but to encourage balance planned and sustainable development where the provision for necessary physical infrastructure and socio-economic amenities are economically made possible. While accessing the future requirement due emphasis is given for upliftment for both urban and rural economy in addition to the provisions of physical and social infrastructure. There are some immediate necessities as pointed out by the various stake holders, which are to be taken up as short term priority schemes & medium and long term proposals for the master plan area as listed below:

**SHORT TERM PROPOSALS**

1. Proposal for fire hydrant at strategic locations inside municipal area under pipe water supply scheme.
2. A comprehensive traffic and transportation management plan including Vending zone, Zebra-crossing, Widening etc. A few roads require enforcement of no-stoppage, no-parking proposal.
3. Preparation of rain / drain water flow direction map and area of congestion / water logged area with the help of elected public representatives
4. Installation of huge National Flag at Zero Point (Thana Chariali) to increase the aesthetic view of the town.
5. Development of Selfie Point at the site of T- Junction of Makum Bypass and 4 (four) lane, at Bengmora Gate & at Welcome Gate to Dibru- Saikhowa National Park.
6. Mapping of all tourist places and Creation of Tourist Information Centre.
7. Protection & preservation of low-lying areas natural channels and old historic ponds.
8. Improvement of Subhosini road with both side drains and provision of no-parking from Pinewood Hospital T-Junction to the connecting point of Subhosini road with Rangagorah road.



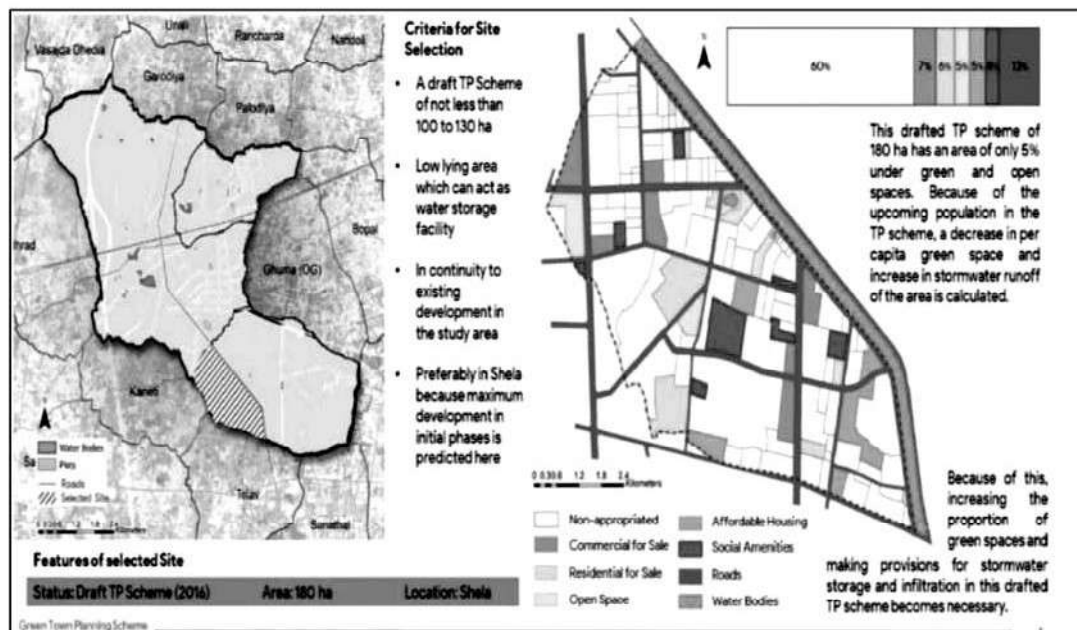
9. Proposal for one way road for better traffic management:
  - (a) Khargeswar road
  - (b) State bank road/ Senairam Lohia road.
  - (c) Chirawapatty road.
  - (d) Devi-pukhuri road
  - (e) Dr. Nabibullah road
10. Widening of a few vital roads in the southern side of master plan for equal development on both sides, better connectivity, ease of movement and sustainable development. Roads are marked in the Circulation plan.
11. Improvement of existing traffic signal points and setting up new ones.
12. Up-gradation of State Fire Service Station: Considering the growth of Tinsukia in recent years, the existing fire service station of Tinsukia requires immediate upgradation with proper infrastructure and machineries to handle any emergencies along with improvement of water sources for intake of water by Fire Service for any disaster / emergency period.
13. Setting up of Organic farming industry and making agricultural marketing board more vibrant.
14. Notification of Devi Pukhuri road as vending zone and unutilized boarding field adjacent to the Devi Pukhuri road as parking space under ideal conditions.
15. Creation of Pool of resource person like Driver, Electrician, Plumber etc.
16. Converting Cremation ground of King Sarbananda Singha into a place of tourist attraction.
17. Walking track at Tinsukia Makum Bypass
18. Plantation at all major roads, educational institutions, Govt offices along the drainage channels (NEEM TREE, FRUIT TREES ETC.)
19. Provision for vending zone in master plan area.

#### **MEDIUM / LONG TERM PROPOSALS**

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. <b>Protection and Preservation of all historical ponds and natural: channels</b></li> </ol> | <p>Tinkunia pukhuri, Napukhuri, Bengmora pukhuri, Bator pukhuri, Chauldhuwa pukhuri, Devi pukhuri, Shelukia pukhuri, Borgodha pukhuri, Harugadha pukhuri, Kodomoni pukhuri, Lamtem pukhuri, Borpukhuri, Kunti pukhuri, Ruahi pukhuri,</p> |
|---|---|

## 2. Planned Residential Neighbourhood through Town Planning Scheme:

Tinsukia is a dynamic, commercially and industrially vibrant growing town having direct access to South-Asian countries if Govt. of India desires to open Still Well Road. It has got immense possibilities of creating employment, generating revenues and becoming one of the most developed districts in the country considering the availability of various resources in the master plan area and its vicinity. Originally the town was not planned, as such, whatever development took place are not very systematic and creates problems to its residents. Moreover, there is no



sufficient infrastructure to accommodate the ever-increasing needs of its region, as such the master plan recommends Planned Residential Neighbourhood with State of Art facilities using cutting edge innovation and new age technology through TPS scheme for the future generation. It will also enhance the overall landscape of this urban agglomeration.

Proper implementation of Planned Residential Neighbourhood shall not only decongest the town, but also reduce pollution, accidents for the existing population and also provide a world class locality to reside in. Further this will boost the development process of this region and also provide **multiple opportunities for employment leading towards an engine of economic growth.**

**3. Proposal for City Square** : Near Tinsukia Revenue Circle Office

#### 4. Shifting of a portion of railway track from IOC Railway crossing to Makum railway junction.



Tinsukia is a commercially and industrially vibrant town and a good place to live in due to its scenic beauty and diverse socio-cultural activities. The town was connected by the Indian Railways somewhere in the year 1883/1884. The railway track is passing through the heart of the town dividing the town into two parts. Tinsukia was declared as a municipal town in the year 1918 and in last 100 years, it has developed manyfolds in its urban and semi-urban areas including existing 15 wards of municipality, 2 census towns and 5 outgrowth villages. Out of aforesaid 15 wards, 5 wards are situated on the southern side of railway track.

Due to the growth of industrial, commercial and residential activities on both sides of the railway track towards northern and southern directions, a large number of population have to cross the railway track daily at several manned and unmanned railway crossings along with loaded trucks, car, rickshaw, etc. and the closing of railway gates has resulted to various inconvenienceto the public at large and economic loss of the nation.

Considering the above and the likely growth pattern of Tinsukia master plan area upto 2041, the plan proposes to take necessary measures **to shift a portion of railway track from IOC Railway crossing to Makum railway junctionand construct a new railway track connecting Bahadur chariali to Makum junction**. This plan also proposes to conserve Tinsukia Jn. as heritage building because it reflects the beginning of railway in this region in the decade of 1880- 1890.

#### Old Tinsukia railway station



- |  |   |   |
|--|---|---|
| 5. <b>Proposal for scientific Solid Waste Management System</b>            | : | At the present dumping site located near LBT road, No.2 Potia Pathar at Tinsukia-Duliajan road (36 Bigha)   |
| 6. <b>Industrial zone</b>  | : | At the junction of Tinsukia Makum By Pass and NH-37/15, Gahoripam gaon at south and at Lohari-bongali gaon (south-east).  |
| 7. <b>Proposal for vehicular under pass :</b>                              |   | <b>1) Intersection of</b> Guijan road Tinsukia-Makum Bypass<br><b>2) Intersection of</b> Gelapukhuri road Tinsukia-Makum Bypass   |
| 8. <b>Proposal for Railway Over-bridge :</b>                               |   | (a) AT road / Rly track for Medical – Polytechnic College.<br>(b) At the junction of Tinsukia – Makum By Pass and NH-37/15 near Gobindapur.<br>(c) From AT road (NH-37/15) connecting Sripuria road.<br>(d) ROB at Ring road at Itakhuli TE 129/126 to Tinsukia Duliajan Road<br>(e) Shripuria Road – Raja Ali Road |
| 9. <b>Cycle Track / Walking track</b>                                      | : | Proposal for cycle track and walking track showed in Circulation Map  |
| 10. <b>Inter- State Bus Terminus (ISBT) :</b>                              |   | At Galapukhuri – Makum Bypass Junction  |
| 11. <b>Freight Zone Logistic Centre cum Hub</b>                            | : | At Tinsukia- Makum bypass joining existing truck terminus under Pradhan Mantri Gati Shakti movement   |
| 12. <b>Neighbourhood Centre</b>  | : | (a) At NH- 15 (Opp. Sukanpukhuri TE)<br>(b) Gahoripam gaon at south.  |
| 13. <b>Integrated Administrative Block. &amp; Judicial infrastructure</b>  | : | At existing D.C Office site   |
| 14. <b>Multi level Parking</b>   | : | At Old Dak Bunglow site   |
| 15. <b>Multi-utility commercial building : Vendors market with parking</b> |   | At present PWD office and State Veterinary dispensary.  |
| 16. <b>Development of Resort and 5 star Hotel</b>                          | : | Tinsukia Makum By Pass or at Proposed four lane on PPP mode   |
| 17. <b>Naturopathy Center &amp; Janagosthiyo Sanskritik Khetra</b>         | : | Near Police Reserve ( Nakari Gaon)  |

18. Ring Road : South of Tinsukia ( Gobindpur / Kukurekhowa road/ Itakhuli TE / Tinsukia Dulijan/ Makum College Road )
19. Effluent Treatment Plan : 1. Near Tinsukia Makum By Pass  
2. Near Tingrai river – Dulijan road

**20. Shifting of existing ASTC bus station – AT road /NH(15)**

The presence of ASTC bus station with big size public vehicles by the



side of busy AT road causes traffic jams and inconvenience to the public. For better mobility and to reduce air pollution, the plan recommends to shift the existing ASTC bus station to the newly constructed Makum Bypass near the junction of Gelapukhuri road.

**21. Shifting of godown from existing ASTC area**





The presence of unplanned, haphazard and congested godowns within core areas of the town make it fire prone and not suitable for healthy urban living. In order to live in a balanced healthy living urban environment the plan proposes to shift all godowns to the proposed logistic hub.

22. Proposal for development of Zero point



23. Proposal for construction of road over TDA drain from Subachani Road to Rangagora Road for smooth commuting of light vehicle and ease of traffic.

24. Faecal Sludge Treatment Plant :- Near Tingrai river – Dulijan road

25. River Front Development at Tingrai river

26. **Construction of an alternative road** parallel to Subhosini road connecting Gelapukhuri and Rangagorah road extending Sarat Chandra Singha path: The existing Subhosini road is very important road and carries heavy mixed traffic everyday. It connects Tinsukia Civil Hospital from both Rangagora and Gelapukhuri road and also act as an alternative road to GNB road when GNB road is closed for any reason. As Subhosini road passes through built-up area with limited Right of Way, as such plan recommends an alternative road to Sobhosini road through Bordoloi nagar, Dohutia chuk connecting Rangagora road.

27. Slum upgradation project under PMAY.

28. Fuel station at Gahoripam gaon and Loharipam nepali gaon Part-2

29. Gas Godown at Padumoni gaon and Kodomoni gaon.

30. Cremation ground proposed at Bahbari gaon (CT) under TP scheme/development scheme.

31. Elevated road from New Tinsukia railway Junction upto Shivdham.

In **the first phase**, the schemes like widening and improvement of roads, construction of new roads, scheme for slum area up-gradation and relocation, provision for required spaces for parks, playgrounds and parking places and improvement of commercial, construction of administrative block and market areas including existing market, daily bazaar etc. can be taken up. In **second phase**, construction of flyover, ROB, Shifting of godown, cycle track, walking track, solid waste, ISBT, construction of commercial complex,

rotary, protection and preservation of ponds etc. and in **third phase**, shifting of railway, logistic hub, and industrial estate etc. The urban local body and parastatal agencies have to play an important role visioning with other Govt. agencies in formulation and execution of such schemes in the master plan area. All the above schemes need to be carried out to make the plan area into healthy place of living.

## 9.2 Fund Requirement for Each Sector/ Project

Fund requirement for each sector project will be finalized by the line departments after preparation of detailed project report as per Govt.

instruction. Table below shows the tentative fund requirement

**TABLE 54**  
**Tentative Fund Requirement for Short term / Long term proposals**  
**including**

Sl.No	Name of the proposal	Tentative project cost (In lakhs)	Remarks
1	Shifting of all Govt. offices scattered in the town area to the Integrated DC office / Administrative Block & Judicial court	6500.00	
2	Construction of a Multi-Utility Commercial Complex cum Vendor's Market with parking facility at existing PWD office and Veterinary Dispensary.	1500.00	
3	A comprehensive traffic and transportation management plan including Vending zone, Zebra-crossing, Widening etc. A few roads require enforcement of no-stoppage, no-parking proposal.		Concern deptt.
4	Improvement of Subhosini road with both side drains and provision of no-parking from Pinewood Hospital T-Junction to the connecting point of Subhosini road with Rangagorah road.	1000.00	
5	Construction of an alternative road parallel to Subhosini road connecting Gelapukhuri and Rangagorah road:	500.00	
6	Proposal for traffic Island for ease of movement (2 Nos.)	200.00	
7	Improvement of existing traffic signal points and setting up new ones.	200.00	
8	Up-gradation of State Fire Service Station & installation of fire hydrant in strategic location	500.00	
9	Development of drainage network as per plan submitted by Drainage & Sewerage Division, Tinsukia.	10000.00	
10	Setting up of Organic farming industry and transferring agricultural marketing board more vibrant.	500.00	
11	Slum upgradation project.	1500.00	
12	Shifting of Daily market from Devi Pukhuri road to nearby Senairam School field.	5.00	
13	Mapping of all tourist places and Creation of Tourist Information Centre.	15.00	

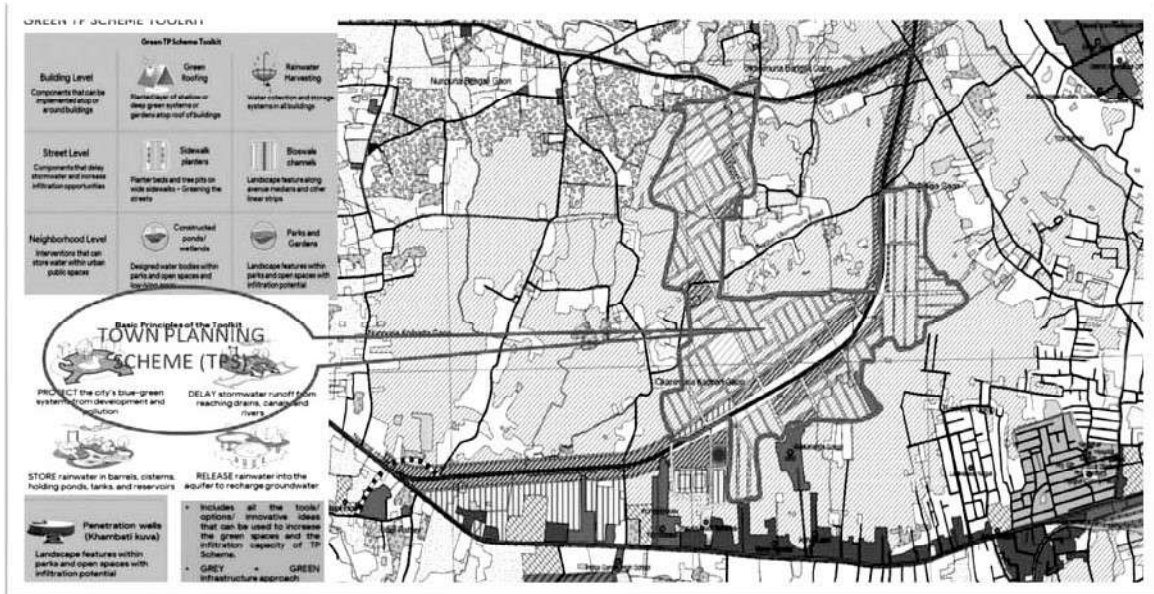
14	Development of Selfie Point at the site Bengmora gate and Welcome gate to Dibru-Saikhowa National Park.	100.00	
15	Converting Cremation ground of King Sarbananda Singha into a place of tourist attraction.	500.00	
16	Walking track at Tinsukia Makum Bypass		
17	Installation of huge National Flag at Zero Point (Thana Chariali ) to increase the aesthetic view of the town	20.00	
<b>MEDIUM / LONG TERM PROPOSALS</b>			
SLNo	Name of the proposal	Tentative project cost (In lakhs)	Remarks
1	Protection and Preservation of all historical ponds and natural channels	200.00	
2	Town Planning Scheme	5000.00	
3	Proposal for City Square	300.00	
4	Shifting of a portion of railway track from IOC Railway crossing to Makum railway junction.		Joint venture with Center Govt.
5	Proposal for scientific Solid Waste Management System		Concern Deptt.
6	Industrial zone		
7	Proposal for Railway Over-bridge (6 Nos.) @ 7500.00 Lakh.	45000.00	
8	Cycle Track	50.00	
9	Walking track	100.00	
10	Inter- State Bus Terminus (ISBT)	2500.00	
11	Freight Zone Logistic Centre cum Hub	3500.00	
12	Neighbourhood Centre		
13	Multi level Parking	1200.00	
14	Convention Center TSK	1500.00	
15	Development of Resort and 5 star Hotel		PPP mode
16	Naturopathy Center & Janagosthiyo Sanskritik Khetra Near Police Reserve	1000.00	
17	Ring Road East- South- West side	10000.00	
18	Proposal for Effluent treatment plant (ETP) in two places under Tinsukia Master Plan (2Nos)	4000.00	
19	Proposal for construction of road over TDA drain from Subachani Road to Rongagora Road	2000.00	
20	Faecal Sludge Treatment Plan	1000.00	
21	River front Development	5000.00	
22	Parks	1000.00	
23	Elevated road from New Tinsukia railway Junction upto Shivdham	75000.00	
24	Total (Rs)	158350.00	

### 9.3 Identify Land Site for Proposal

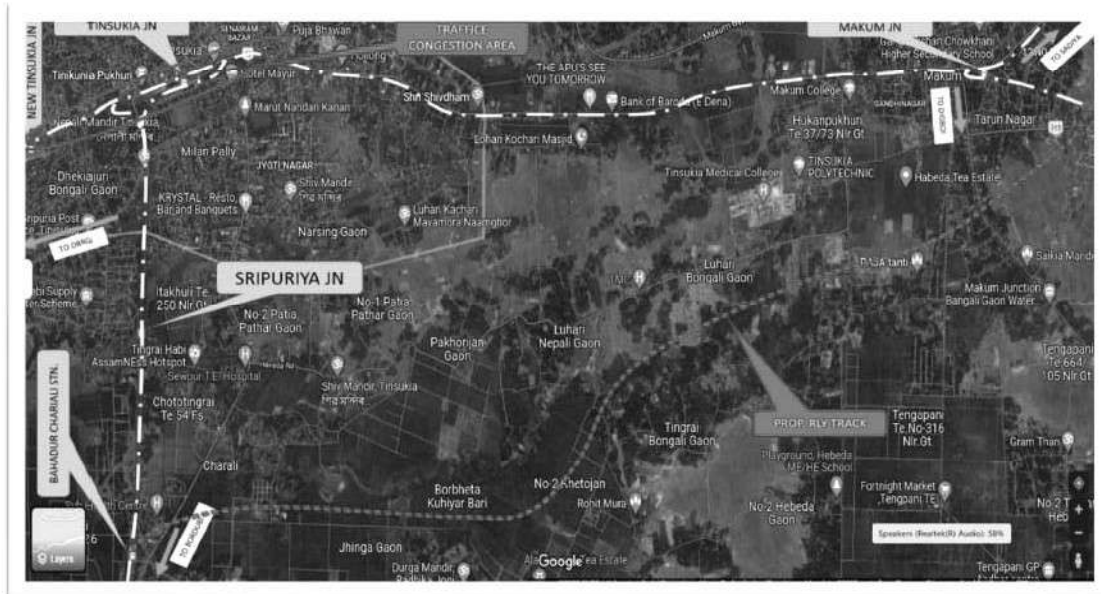
The plan finds the following sites are suitable for taking up the proposals in accordance with the existing trends of growth as well as for balanced development.

#### ( 1 ) **PLANNED RESIDENTIAL NEIGHBOURHOOD (TOWN PLANNING SCHEME / DEVELOPMENT SCHEME)**

Considering the availability of land, connectivity, existing nearby infrastructure and suitability of development a site has been selected covering an area of 993 Bighas (Approx) at Okonimuria Kachari gaon, Dehingia gaon, & Okonimuria Bangoli gaon Mouza Bogdung at Tinsukia Makum By Pass for plan development and also to provide drainage connectivity as envisioned in the Pradhan Mantri Gati Shakti Mission



**(2) Shifting of a portion of railway track from IOC colony level crossing to Makum junction.**



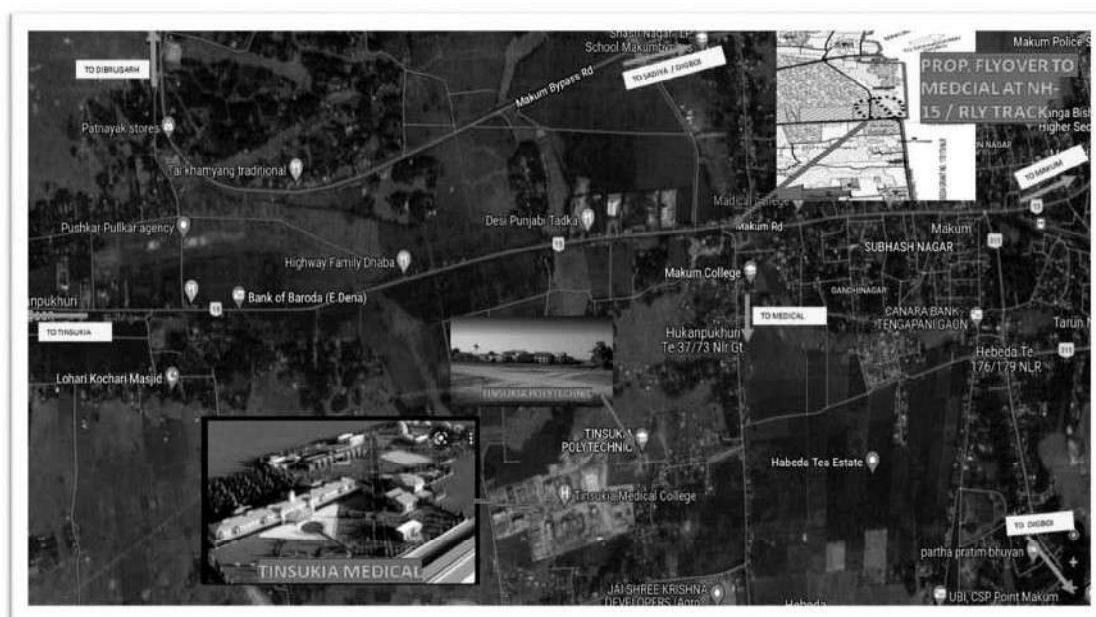
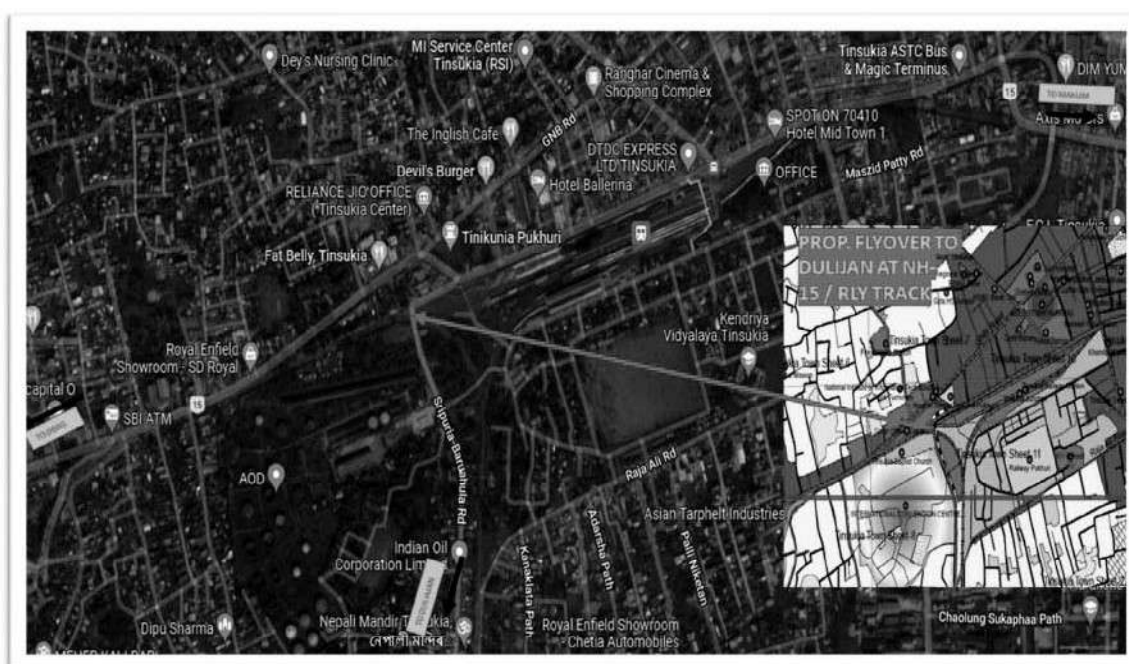
**(3) Proposal for industrial areas in Tinsukia master plan**



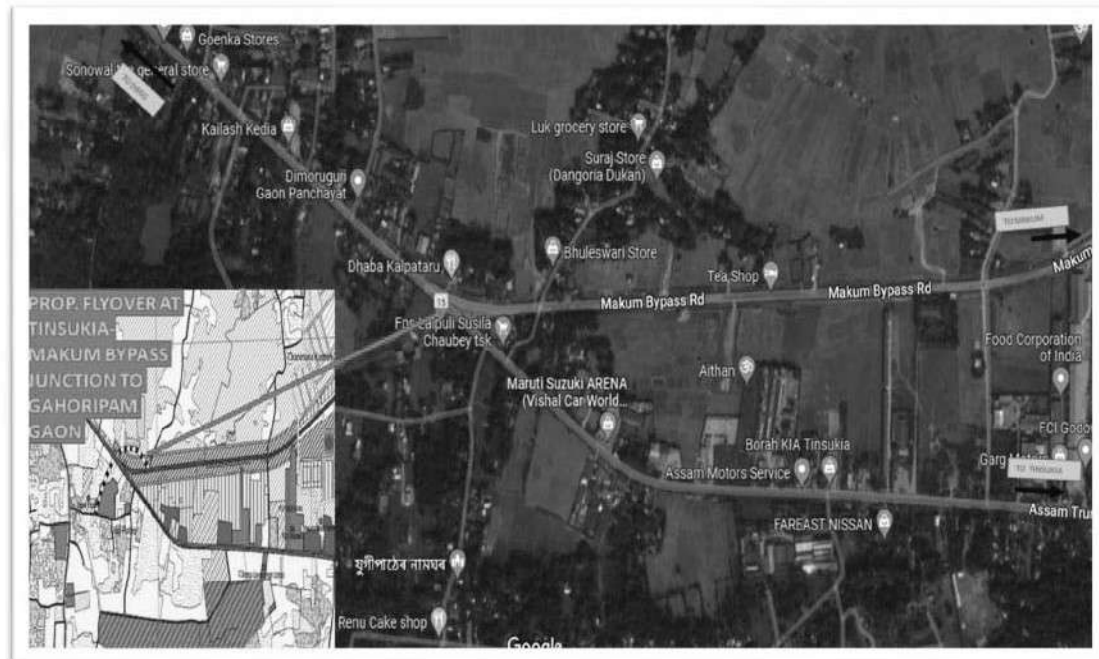
**INDUSTRIAL ZONE**

1. At the junction of Tinsukia Makum By Pass and NH-37/15,
2. Gahoripam gaon at south and at Lohari-bongali gaon (south-east).
3. Lohari Bongali Gaon (Hebeda Road)

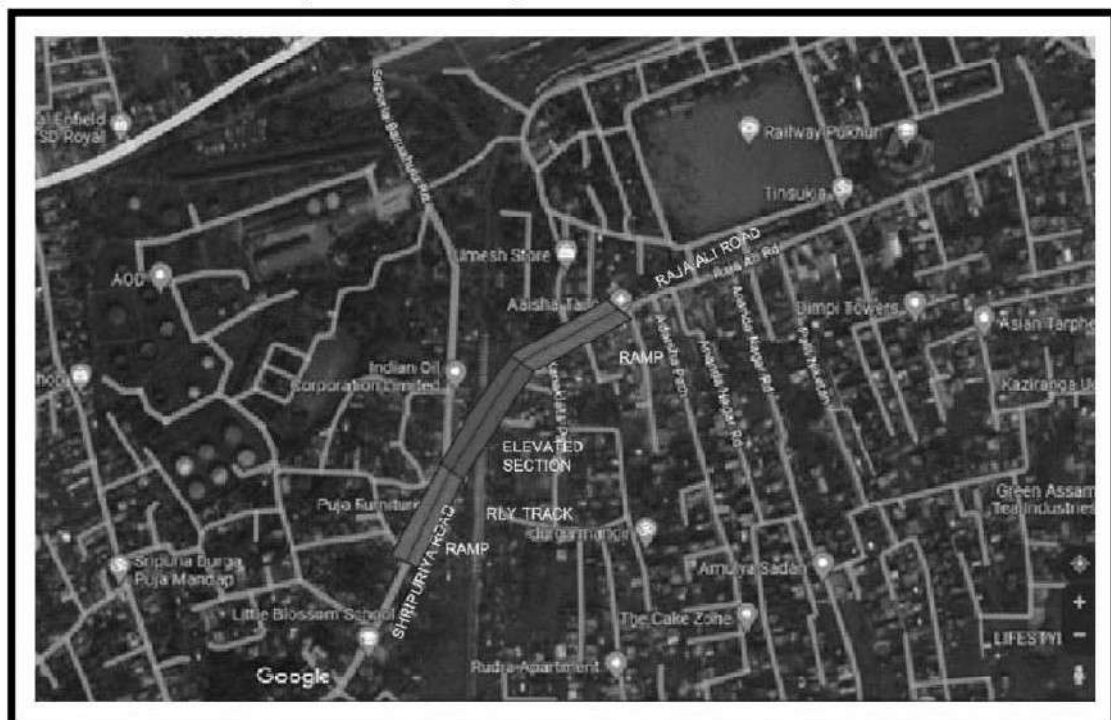


**( 4 ) Proposed Railway over bridge ( ROB ) :-****(A) PROP. ROB AT AT road / NH- 15 for Medical – Polytechnic College****(B) PROP. ROB AT AT road / NH- 15 TO DULIJAN**

**(C) PROP. ROB AT NH-15 AT TINSUKIA – MAKUM BY PASS JUNCTION ( LAIPULI)**

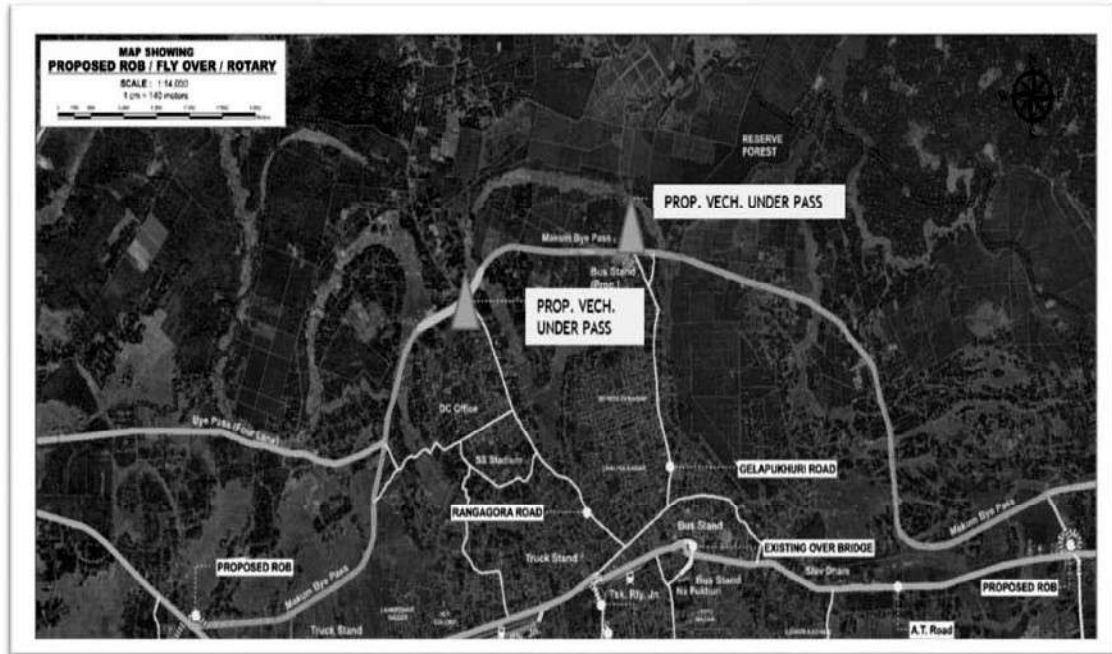
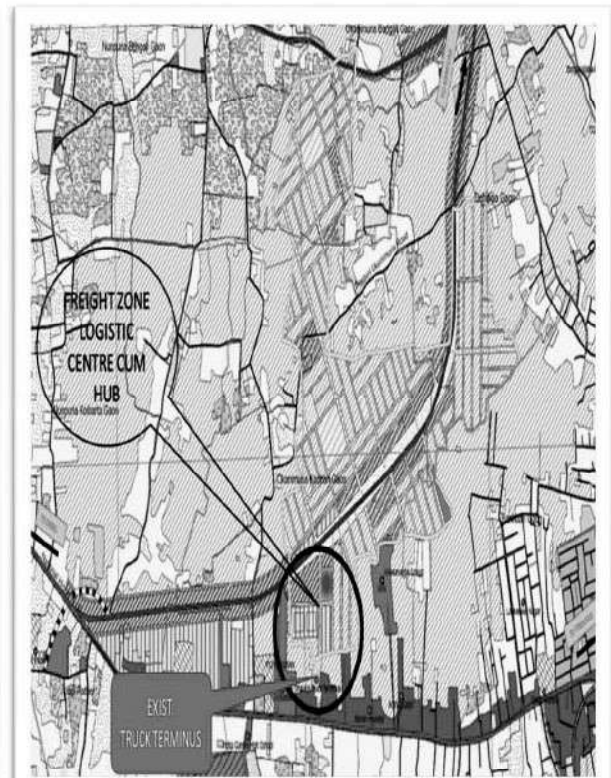


**(D) PROP. ROB at Shripuria Road – Raja Ali Road**

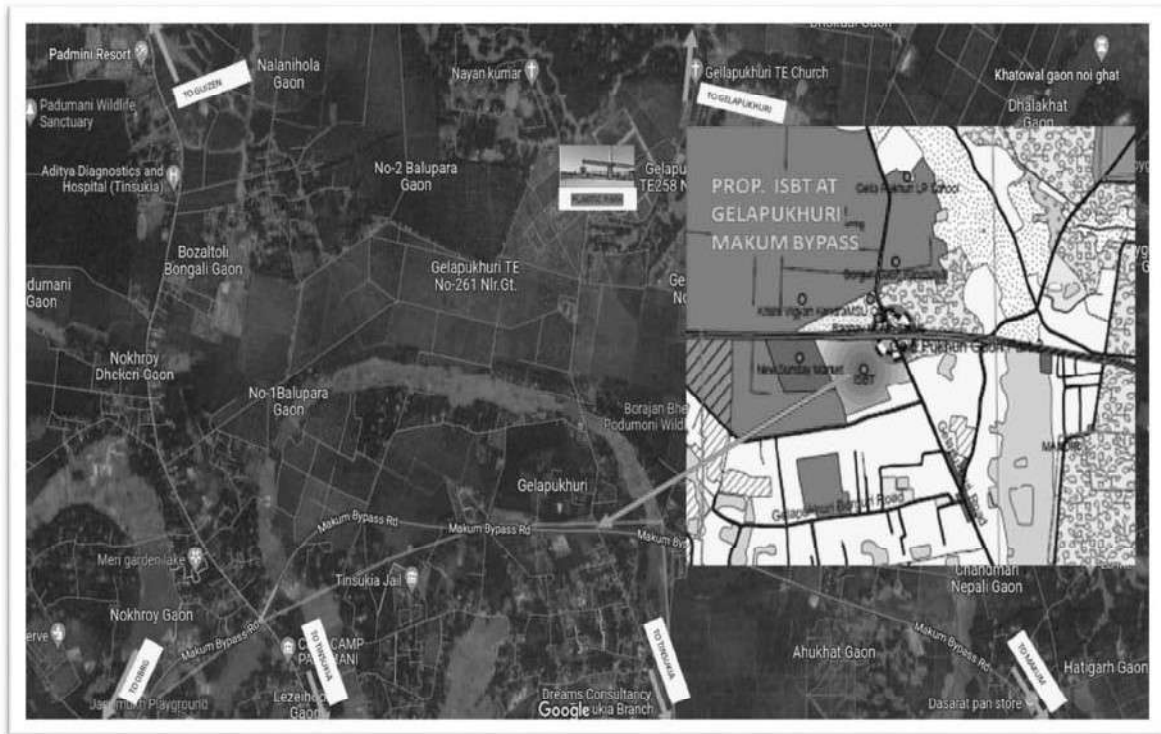


**(5) Proposed Vehicular under pass**

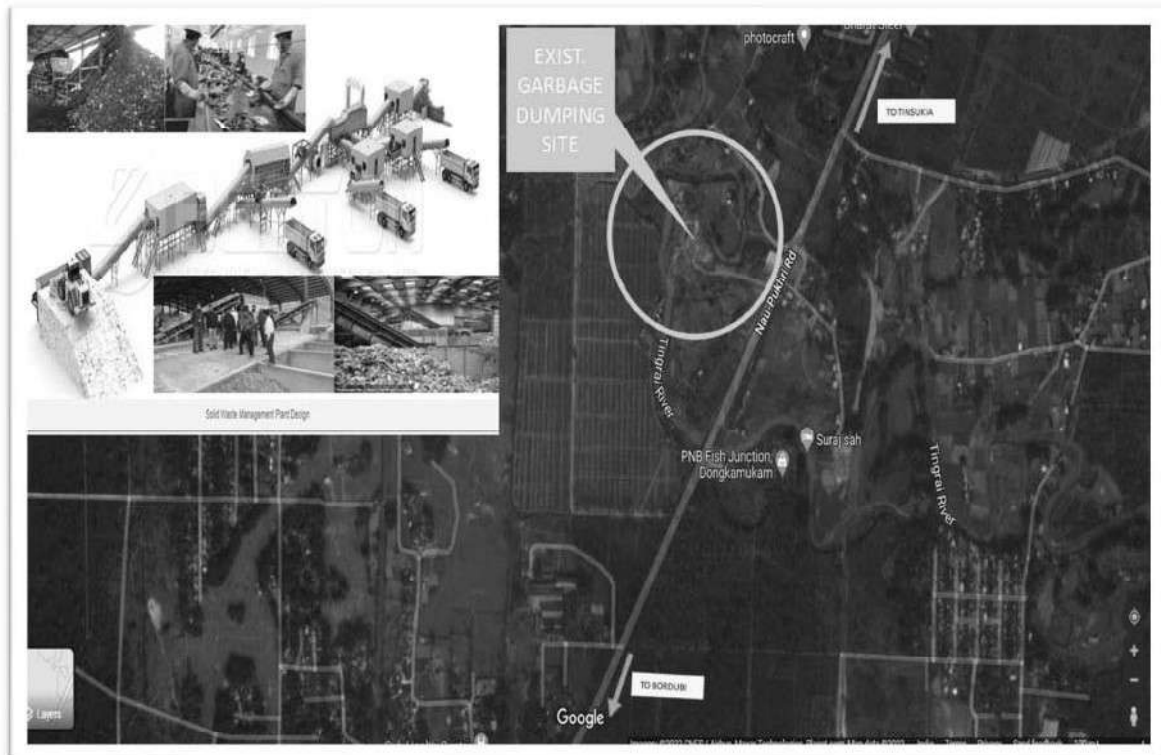
- At the intersection of tinsukia makum- bypass & rangagora road
- At the intersection of tinsukia makum- bypass & gelapukuri road

**(6) Proposed Freight zone logistic Centre Cum Hub at Tinsukia- Makum bypass**

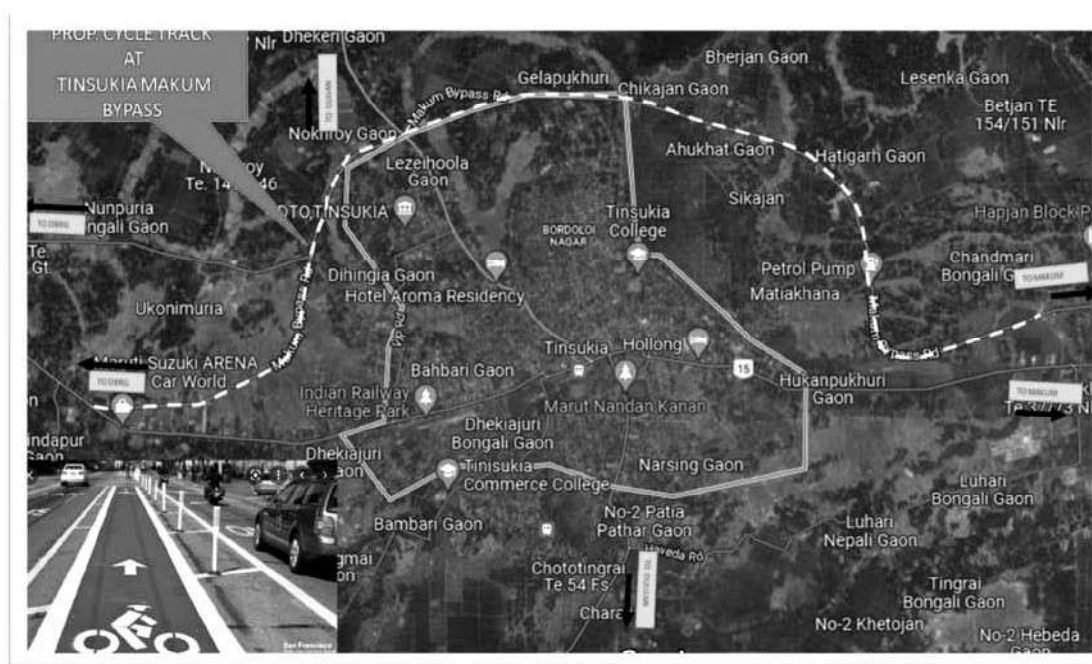
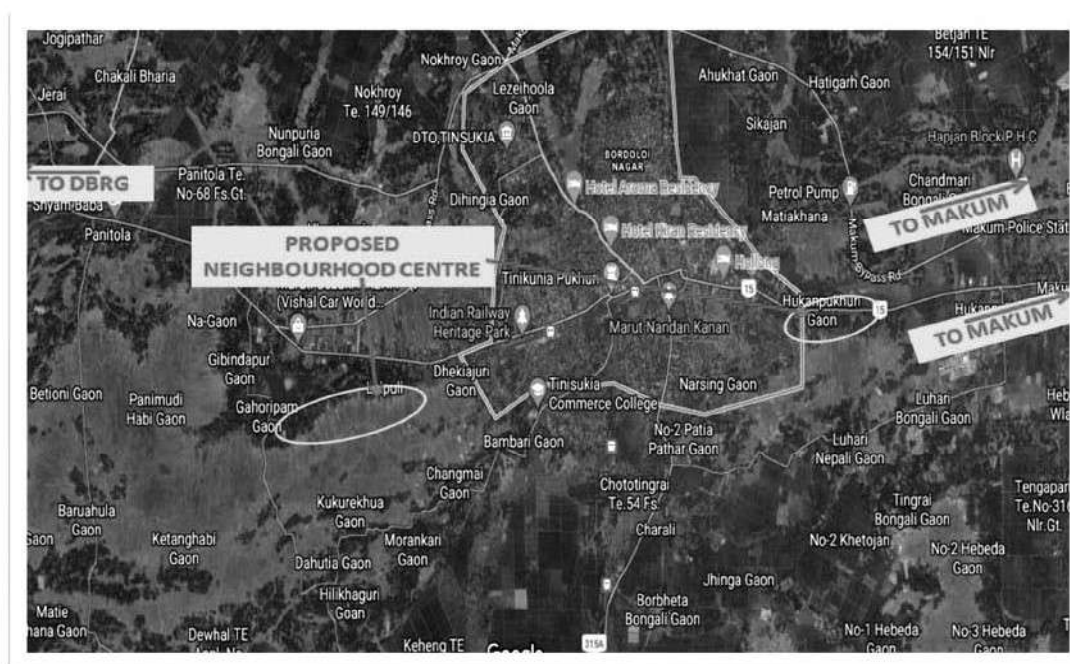
### (7) Proposed ISBT at Galapukhuri – Makum Bypass Junction



### ( 8 ) Solid Waste Management System as per waste management Rule, 2016.

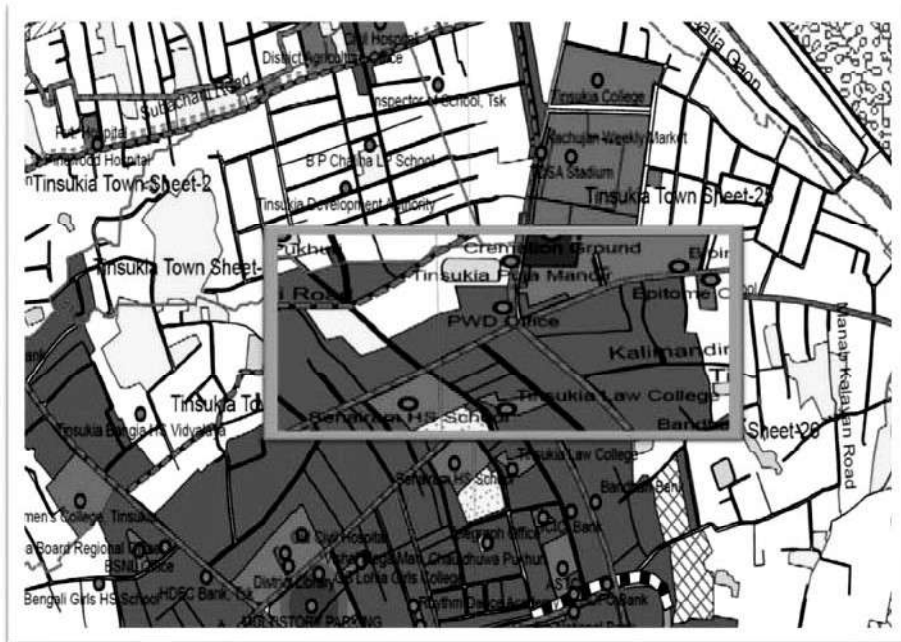




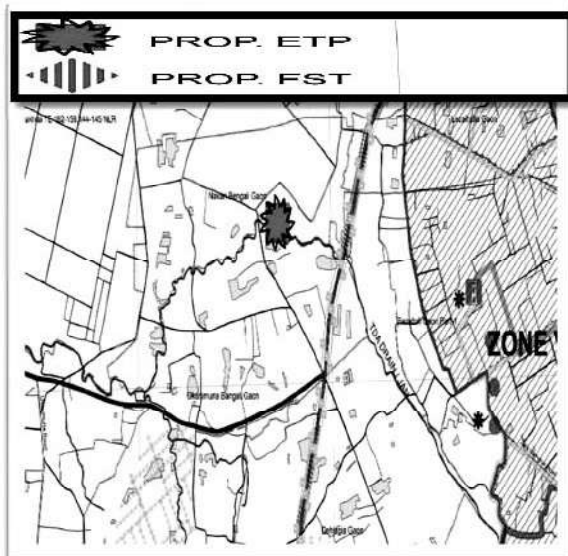
**( 9 ) Cycle track :- At Tinsukia – Makum Bypass and other areas****(10) Proposed Neighbourhood Centre ( NH- 15 (Opp Sukanpukhuri TE) & Gahoripam Gaon at South**



- 11. Construction of a Multi-Utility Commercial Complex cum Vendor's Market with parking facility at existing PWD office and Veterinary Dispensary.**



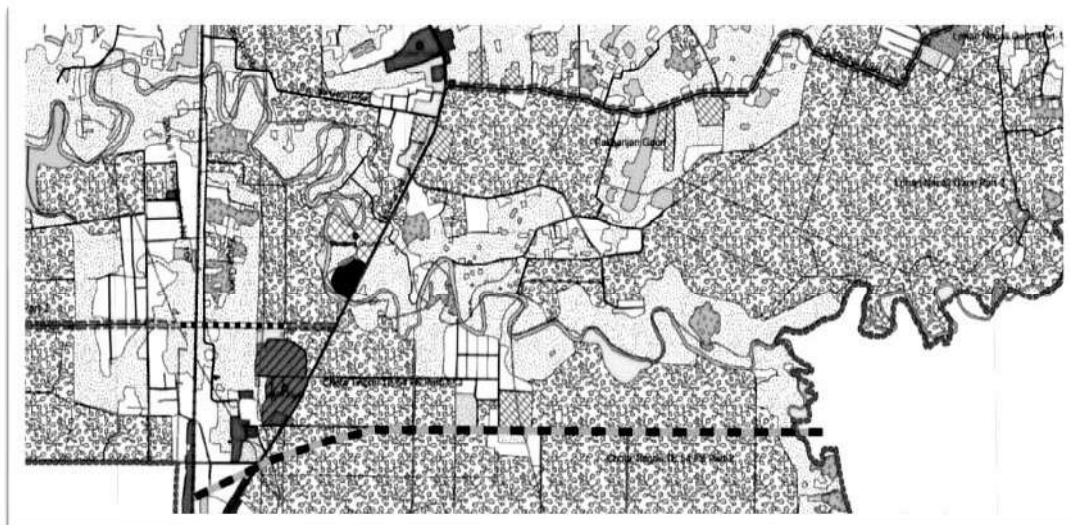
- 12. Proposal of double shutter Sluice Gate at Guijan by Water Resource Department under flood protection measures**
- 13. Proposal for Effluent treatment plant ( ETP) in two places under Tinsukia Master Plan&Faecal Sludge treatment plant**



NEAR MAKUM BYPASS




NEAR TINGRAI

**14. River Front Development at Tingrai river****15) Vending Zone :**

- (a) Thana Road Near Dak Bungalow
- (b) Devi Pukhuri Road
- (c) LBT Road (near Napukhuri)
- (d) Gelapukhuri road (near Kachujan field)
- (e) Borguri tinali
- (f) NH-15 towards Makum at the intersection leading to thermal
- (g) Near Circle Office & at the premises of Circle office along with City Square, after the construction of integrated DC office.
- (h) Hijuguri at the existing Vendor's Market

**16) Rural economic growth**

**RURAL  
ECONOMIC  
GROWTH**



**PRESERVATION  
of Agricultural Land**

1. ORGANIC FARMING ( MUSHROOM CULTIVATION )
2. PROMOTION OF LOCAL HANDICRAFT & HANDLOOM WORKS
3. FOOD PROCESSING, COLD STORAGE & WAREHOUSE
4. LINKAGE WITH RURAL TOURIST SPOTS
5. CREATION OF SEED BANK
6. INTERVENTION & PROMOTION OF CASH CROPS IN RURAL AREAS.
7. LOCAL TRAVEL GUIDE IN TOURISM SECTOR
8. AGRICULTURAL CREDIT SOCIETIES ,
9. PROVISIONS OF HUT /SHED FOR WEEKLY MARKET.

**9.4 Indicative Sources of Fund**

The ULB, parastatal agencies and concerned line departments shall submit the DPR's to their respective departments for sanctioning fund from State and Central Government under various schemes like Infrastructure Development Fund, NLCPR, NEC, Asian Development Bank etc. The implementing agency can also adopt the policy of Public Private Partnership (PPP) mode for raising the fund for the remunerative projects.

## **CHAPTER-10**

### **10. Disaster Management Plan**

#### **10.1 Introduction**

Disaster is an undesired calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Disasters are usually caused by nature but in some cases, it can be caused by human actions as well. Disaster can be broadly classified into water and climate related, geology related, and accident related. India has been traditionally vulnerable to natural disasters on account of its unique geoclimatic conditions. Floods, droughts, cyclones, earthquakes, and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought.

At the national level, the Ministry of Home Affairs is the Nodal Ministry for all matters concerning disaster management. The Central Relief Commissioner (CRC) in the Ministry of Home Affairs is the nodal officer to coordinate relief operations for natural disasters. The CRC receives information relating to forecasting / warning of a natural calamity from India Meteorological Department (IMD) or from Central Water Commission of Ministry of Water Resources on a continuing basis. The Ministries/Departments/Organizations concerned with the primary and secondary functions relating to the management of disasters include India Meteorological Department, Central Water Commission, Ministry of Home Affairs, Ministry of Defence, Ministry of Finance, Ministry of Rural Development, Ministry of Urban Development, Department of Communications, Ministry of Health, Ministry of Water Resources, Ministry of Petroleum, Department of Agriculture & Cooperation, Ministry of Power, Department of Civil Supplies, Ministry of Railways, Ministry of Information and Broadcasting, Planning Commission, Cabinet Secretariat, Department of Surface Transport, Ministry of Social Justice, Department of Women and Child Development, Ministry of Environment and Forest, Department of Food.

**Location:** The region falls in the North eastern part of India and in the extreme east of Assam of 27.5° North latitude and 95.37° East longitude. The soil is mostly of alluvial origin. Due the heavy rainfall with cool and pleasant climate, vegetation growth is rich. The annual mean of maximum temperature is 24° C and the mean daily minimum at 9° C to 11° C temperature. On the other hand, the minimum relative humidity is 64 whereas maximum is 90.

With the passing of years Tinsukia has become a fully-grown urban centre of upper part of Assam and become the hub of administrative, educational, and commercial activities.

The area stretches from the north bank of the mighty Brahmaputra, which flows a length of 95 km through the northern margin of the district, to the Patkai foothills on the South. Till the great earthquake of 1950, the north easternmost corner was drained by the Dibru River. The Dibru was a main tributary of the Brahmaputra the confluence of it being at about 11 km north of Tinsukia city, the earthquake caused severe erosion on its south bank and

as a result the Dibru river got merged with its master stream in Rahmaria mouza under Dibrugarh district.

The district suffers following major natural hazards – floods, chemical disasters (fire), draught, famine and earthquake, which are of high frequency of occurrence. In the past years, flood has become a sorrow for the people of Dibrugarh district. Immediately after the great Independence day, earthquake of 1950, consequent landslides in the catchment areas of Brahmaputra and other tributaries have changed the topography of the rivers.

## **10.2 Current Scenario**

The Tinsukia Development Authority (TDA) Drain which runs through the heart of the Town and passes by VIP road (2.8 Km) / flows towards north-west crossing Makum Tinsukia bypass (1.7 Km) covering a distance of 4.5 km. from the town. On the other hand, most of the roadside drains are kutchas and have mild gradient towards the outfall. The low discharging capacity of these drains, poor drainage system and unfair construction practices has been the main determinant of artificial flood and water logging problem in the town. The worst affected areas are Manav Kalyan Road, State Bank Colony, Parbotia, Prakash Bazar, Super Market, Daily Bazar, a large stretch of AT Road and Rangagora Road, Makum Road, Raja Ali Road and Sripuria.

The basic objective of current Disaster Management Action Plan is to protect all the residents and the wealth of the region from all sort of untoward incidents through the following objectives:

- To prevent loss of human lives and property.
- Institutionalization of disaster management in district administration level.
- Encourage a culture of disaster preparedness.
- Vulnerability reduction and disaster mitigation through better planning process.
- Creation of best government mechanism to handle and unprecedented events.
- Instant response and effective decision making in disasters.

Better coordination of relief and rehabilitation in the aftermath of a disaster.

- Better coordination of all line departments in disaster management.
- Regular updates of resources in and around the district.

## **10.3 Hazards Specific Proneness in Tinsukia:**

### **10.3.1 Flood**

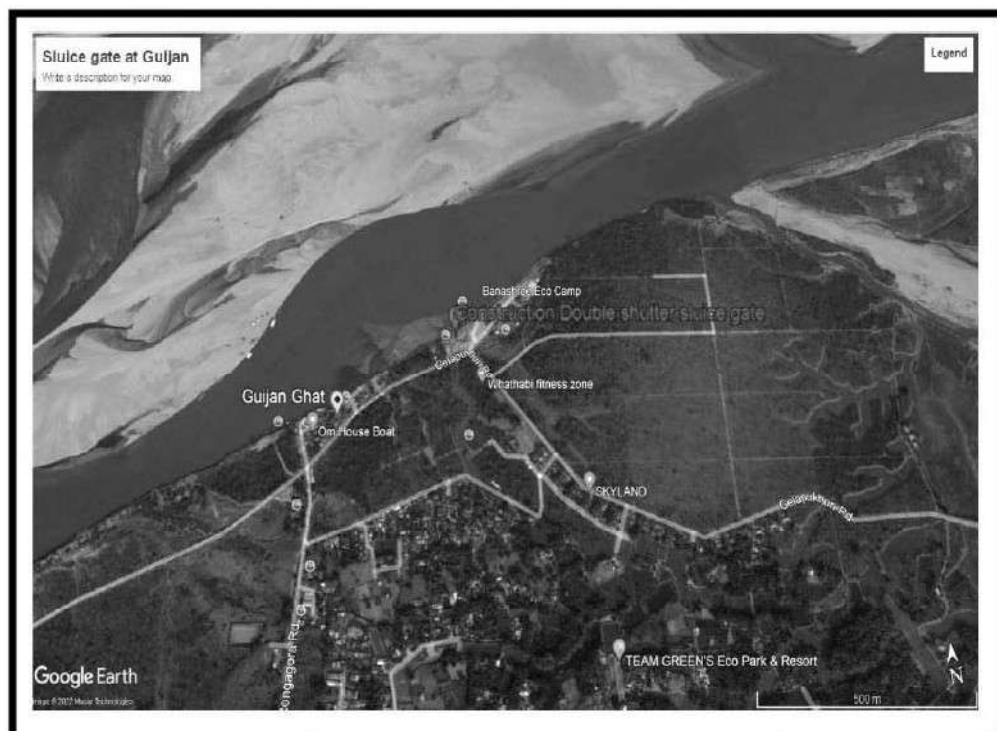
The tributaries of the Brahmaputra have widely divergent characteristics in the district. 45 per cent of Assam's total area is flood prone. The Brahmaputra river with its 34 tributaries causes regular floods in the state. The average annual rainfall in the state is 1662.2 mm. Ninety per cent of the heavy downpour occurs in the months of April-September. In 1999, more than 200 villages were inundated, and 0.27 million people in 749 villages of 10 districts were affected. In the year (2001), 94,382 people in 12 districts and 483 villages were severely affected. Road and rail communication



was cut off in many districts. In 2000 alone, 3 million people lost their homes and vast stretches of paddy were swallowed by floodwaters. During 2002 floods 41 people have lost their lives, 19,827 houses damaged, and 0.3 million hectares of cropped land has been affected. During 2003, 30 people have lost their lives, 4660 houses have been damaged, and 0.2 million hectares cropped area has been affected.

Tinsukia has a high amount of rainfall primarily because of the clouds of the monsoon. This leads to very high rainfall in the whole district. Such a heavy rainfall causes largely flash floods, and occasionally erosion etc. The affected villages in Tinsukia district under (a) Tinsukia Revenue Circle are from Rangagorah Mouza 13 villages, Bogdung Mouza 1 village, Tingrai Mouza 1 village (b) Margerita Revenue Circle are from Makum Mouza 20 villages, Tirap Mouza 13 villages, Buredihing Mouza 3 villages (c) Doomdoma Revenue Circle are from Sadiya (SouthBank) Mouza 18 villages, Sadiya (SB) Mouza 4 villages, Saikhowa Mouza 10 villages, Hapjan Mouza 6 villages (d) Sadiya Revenue Circle 68 villages.

The water of northern Tinsukia generally flowing through the natural channel toward Guijan (Dibru- Saikhowa Eco Resort) crossing tea gardens, agriculture land & village areas and falls in the river Brahmaputra. It has been observed that during the flood season the water from Brahmaputra reverse back from the outlet and enter into the main land of northern part of Gelapukhuri road and inundated the whole area. As such, a **Water Resource Department proposes a double Shutter Sluice gate at Guijan under flood prevention measures towards stopping the flooding in Gelapukhuri road and its adjoining areas during ensuing flood.**



### 10.3.2 Earthquake :-

Around 58 % of the territory of India is vulnerable to earthquake, and the country has experienced 3 main earthquakes in the past few decades. The state of Gujarat has experienced a major earthquake in January 2001, Jammu & Kashmir in October 2005 and Sikkim in 2011. The major consequences of any earthquake are widespread human and material losses, excessive damage to infrastructure and services. The North-East part of the country where Tinsukia region lies has observed major earthquakes in year 1984 and 2009.

As per the latest seismic zoning map of India, Tinsukia region falls under High Risk Zone- V, where a maximum intensity of IX can be expected.

In 1950 the name of Sadiya in present Tinsukia district is noteworthy. The township of Sadiya was the first casualty owing to the change of the course of the Digaru river. As a result of the earthquake, Sadiya was completely cut off from the rest of the world by the river Brahmaputra and people of this area suffered to a large extent. Moreover, increase in channel width of the Brahmaputra River, grasped more than hundreds of villages in the region. Many people who were washed away or fall into the cracks, could not be saved. The increase in the width not only caused problem in the communication and transportation between two banks; but also left many people homeless and stranded in the middle of the nowhere. Beside this, the 1950 earthquake had a great impact on the agriculture which was the common means of livelihood. As the agricultural land was affected by earthquake, the farmers could not cultivate their lands for a long period of time as lands became barren and uncultivable. The decline in the cultivated area was witnessed after the 1950 earthquake which noticeably gave a setback to the economic condition of the common people and it affected in collection of land revenue also, which was considered as a great loss to the government. In the valley, displacement of people was witness- due to erosion, which became a perennial problem after the 1950 earthquake. A number of displacement was witnessed and those displaced people were settled in the areas mostly forests reserves or grazing reserves.

### 10.3.3 River Erosion :-

River erosion is a season specific calamity observed in certain period of time mostly in fixed seasonal interval. In rainy season specifically from



months April to July, when Brahmaputra river flows in its peak capacity level, the erosion on banks becomes disaster for the bank settled informal settlements. In year 2008 And 2010 river erosion in a massive scale was observed.

**TABLE NO-55**  
**River Erosion in Tinsukia**

Particulars	Area eroded (ha)	Area deposited (ha)
The amount of erosion and deposition during 1996- 2002 in Tinsukia	2143	589

(Source :- Superintending Engineer, Hydrological Observation Circle, Central Water Commission, Ghy Report 2004, pg.17)

#### **10.3.4 Fire : -**

The fire takes places in Tinsukia due to short circuit in commercial areas, thatched house. Mainly fire takes place from March to April when the climate remains very dry. Tinsukia region is also prone to industrial disaster due to the presence of oil refinery, coal and oil pipe lines in the region.



Authorities are trying to douse the flame at Baghjan oil well in Assam's Tinsukia district for over a month.(ANI File Photo)

#### **10.3.5 Cyclone:-**

In Tinsukia cases related to medium density cyclone occurred in many places and affect the region. At least 2 children died and several injured when a cyclonic storm lashed vast areas under Saikhowa block in Tinsukia district on 14 May 2019 (Sunday) evening. The storm affected as many as 45 villages under four panchayats, namely Dangori, Dholla Dhabum, Saikhowa and Na Bormura. According to an estimate, 1,205 houses were damaged and several were flattened. Trees were uprooted leaving a trail of devastation in 30 minutes strike.

**TABLE NO-56**

Sl.No	Disastrous Event	Year of occurrence	Area Affected
1.	Cyclone storm	2010, 2012,2016, 2017,2019	Doomdoma, Dangori, Dholla Dhabum, Saikhowa, Kakopathar, Margherita

## 10.4 Seasonal Hazard Analysis

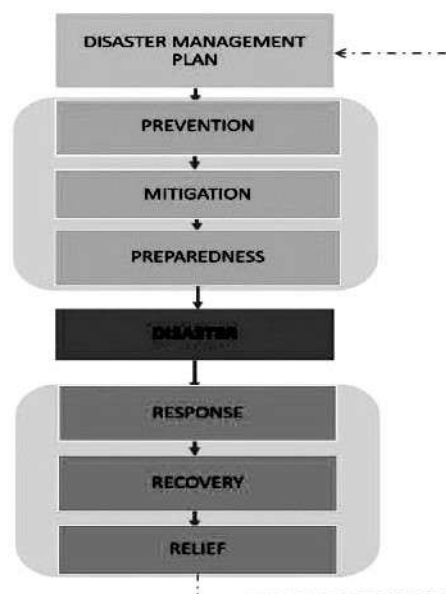
**TABLE NO-57**

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Flood												
Drought												
Earthquake												
Fire												
Industrial Disaster												
Epidemic												
Road Accident												
Lightening												

### 10.5 Disaster Vulnerable Area Mitigation Plan

Any disaster management plan or emergency management plan consists of four phases, namely: Mitigation, Preparedness, Response and Recovery. The mitigation component in an emergency management plan is aimed at reducing the risk, impact, effects of a disaster. Hence careful planning in the mitigation phase is important to reduce or eliminate the longterm risk to human life, property from natural and manmade calamities. It's important to have mitigation plans led by local community, working together to identify, plan for in the event of a disaster and reduce vulnerabilities and promote long term personal and community resilience and sustainability. Mitigation plans can concentrate on both pre-disaster and

post disaster efforts to reduce the impact of the disaster. Pre-disaster Mitigation should focus on projects and interventions to address natural and man-made disaster to reduce risk to the population and property. This is mainly achieved by strengthening the resilience of National/State Infrastructures. Post-disaster Mitigation efforts are primarily designed to reduce future damage in an affected area and decrease the loss of life and property due to the incidents following the disaster. Tinsukia region is more prone to floods, than any other natural disasters hence the disaster vulnerable area mitigation plan focuses on flood and cyclone related eventualities and how can it be mitigated and have a better preparedness. It is important to note that disaster management is an integrated task involving various government departments of region and the plan should focus on prevention, preparedness, mitigation, response, and relief measures.



#### 10.5.1 Prevention Plan

As part of prevention of the said natural disasters, the following measures can be adopted by concerned government departments to avoid and minimize the impacts of natural disasters.

The Water Resource Department should monitor the major water bodies like rivers, streams, lakes for constant flow of water, rising levels, and identify potential areas along the water bodies which need additional embankment or revetments, and these works should be implemented on priority before the onset of the season.

Power and Communication should carry out through inspection of power lines, communication lines for defects and rectify them. Trees and branches which may damage power and communication lines should be trimmed or removed.

Health department should ensure that the primary practice upon triage and community health centers are equipped with medicines and medical staff. Preventive vaccines for epidemics should be stocked in adequate quantity.



Chlorination of drinking water should be ensured to avoid the outbreak of epidemics in the event of cyclones and floods.

The Department of District Disaster Management Authority is the nodal agency in the Tinsukia region and has already handled several flood and cyclone situation in the region. From this experience, it should be able to identify the low lying and vulnerable areas and the population of such places must be warned to be alert and to be ready to move to the cyclone shelters or to safer areas or to the relief camps in case of warning of disaster.

The Department of Civil Supplies & Consumer Affairs should decide for creation of buffer stock of food grains by making required withdrawal from the Food Corporation of India. Also, adequate quantities of Kerosene and diesel should be procured and made available through the Fair Price Shops.

Department of Agriculture should take steps to publicise precautionary measures to be taken to save the standing crops in the vulnerable areas. Farmers should be encouraged to have platforms in their fields to stock the crops. Desilting of public and private irrigation channels should be ensured for quick drainage of paddy fields.

Fisheries & Fishermen Welfare Department shall alert all the riverside villages and hamlets about the impending natural calamity and advice the fishermen not to venture into sea till normalcy is restored.

Department of School Education shall keep all schools ready for accommodating the evacuees and keep the Central Kitchens to function around the clock with in charge of the centres. NCC and NSS students shall also be grouped to send them for relief works and evacuation mockdrill practice in school.

Transport Department should keep ready the list of sufficient numbers of earthmoving vehicles, transportation vehicles such as trucks, tractors, tippers, mini buses etc. Further, all the listed vehicles allocated in connection with calamity has to be kept in roadworthy condition for using them in emergency.

Fire Services Department and State Disaster Response Force shall keep available sufficient number of rescue materials, like life jackets, buoys, ladders and ropes.

Similarly, the Fire Services Department shall set up Search & Rescue Team consisting of at least 6 members of each Fire Service Station.

Department of Animal Husbandry & Animal Welfare should store fodder, cattle feed, poultry food etc. and also carry out the inoculation of animals against epidemics. The Key Village Units should harbour stray cattle with shelters.

Local Bodies shall make arrangements for availability of Generators and pump sets at short notice. For areas with waterlogging Local bodies should clear the L & U type drains which normally clog due to plastic materials and silt.

The Police Department shall set up a Search & Rescue Team which shall contain at least 20 Police Personnel for each jurisdiction of the Superintendent of Police.

Identification of hazardous locations in different Circles is to be done and marked on the map. Basically, these locations are found prone to fire, earthquake, and artificial flooding. Fires found to be spread out mostly as a result of narrow roads while artificial flooding because of poor drainage

pattern. Master Plan of Drainage pattern is to be completed by Town & Country Planning. Disaster Management Plan should be prepared by all concerned departments as per Disaster Management ACT 2005.

There are 2 types of majors Structural and non-structural i.e., Steps are to be taken to mitigate the problems out of erosion in the banks of Brahmaputra, Fire & Earthquake and Training of Village Land Management and Conservation Committee Members (VLMCC) on preparation of Village Master Plan and Constitution of Ward Disaster Management Committee in 15 wards of Tinsukia Municipal Board and follow up action

The activities of different line departments to save the life of people and properties in accordance with disaster management cycle. Police departments, Police control room, Wireless facilities, Fire and emergency services and civil defense and home guard.

**TABLE NO-58**  
**Structural and Non-structural measures of line departments**

<b>Sl. No.</b>	<b>Structural measures</b>	<b>Non-structural measures</b>
1	Installation of Water Collection Deep Tube Well Pumps at five selected sites to be used for firefighting purposes	Training of Village Land Management and Conservation Committee Members (VLMCC) on preparation of Village Master Plan
2	Water Pumps to install in identified locations to pump out logged water	Constitution of Ward Disaster Management Committee in 15 wards of Tinsukia Municipal Board and follow up action
3	Construction of Wooden Boat to be used for rescue purposes	Public awareness programmes on Safe Construction Practices & Earthquake Preparedness in different wards of Tinsukia
4	Redesign existing storm water and drainage systems in flood prone areas	Training of Doctors on Emergency Health & Mass Casualty Management ( TRIAGE)
5	Erosion protection works in vulnerable reaches along the bank of river Brahmaputra , Works to strengthen the embankment	Increase public awareness of flood hazard and mitigation possibilities
6	Undertake structural safety audit of lifeline buildings and schools	Training of Engineers on Rapid Visual Screening, Workshop on Earthquake Risk Mitigation and Management
7	Undertake structural safety audit of Shopping, Malls, Nursing Homes, multistoried buildings	Training of Task Force Members (Quick Response Team) on Search, Rescue and First Aid
8	Map locations of all key buildings in the District and rate them on the basis of rapid visual screening exercise/ Non-Destructive (ND) Test	Earthquake Shakeout programme in schools
9	Undertake retrofitting of key lifeline and critical/ social infrastructure	Training of Principal/ Head Masters of HS/High/ME/LP schools on School Safety &

		Disaster Management
10	Adopt zoning parameters as identified in the Model Building Byelaws issued by MHA (Sept. 2004)	Mock exercises in several locations
11	Fire Safety Audit of Shopping Malls, multistoried buildings as per underlying norms National Building Code	Training programmes on Disaster Management conducted for the officers & staff of different vital Govt. establishments
12	Enforcement of National Building Code/Indian Standard Code of Practice (BIS) and Assam Notified Urban Areas (Other than Guwahati) Building Rules, 2014	Disseminate alert and warning mechanisms of flood early warning system (FLEWS) project to communities (preferably through VLMCC)
13	Conduct detail flood hazard mapping of the District	Promote flood insurance
14	Map all infrastructure at risk to varying intensity of flood hazard	Disseminate flood hazard mapping information to stakeholder
15	Identify areas prone to sediment built up and measures to take up	Undertake Undertake Mock Drill on flood rescue

### 10.5.2 Mitigation and Preparedness Plan

Pre- disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its direct effects. The best example of mitigation is the construction of embankments and construction of proper drainage system in flood prone areas to avoid floods. The other example includes retrofitting of weak buildings to make them earthquake resistant.

And preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account an estimation of emergency needs and identifies the resources to meet the needs. The first objective of the preparedness is to reduce the disaster impact through appropriate actions and improve the capacity of those who are likely to be affected most. The second is to ensure that ongoing development continues to improve the capacities and capabilities of the system to strengthen preparedness efforts at community level. Finally, it guides reconstruction so as to ensure reduction in vulnerability. The best example of preparedness activities are the development of community awareness and sensitization system through community education and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief.

For a successful mitigation plan it is necessary to identify short-, medium- and long-term mitigation measures for various hazards for structural and non-structural risks and damages. Mitigation measures should focus to reduce both the effect of the disaster and the vulnerable conditions to it, in order to reduce the scale of a future disaster and its impacts. Mitigation measures should also focus at reducing physical, economic and social

vulnerability of the region at the event of the disaster. Cyclone mitigation and preparedness largely hinges on the preparedness of the community. The following steps can be taken to reduce the risk in the unfortunate event of the said natural disasters.

### **10.5.3 Restore Communication networks:**

The task force in association with Fire Service, State Disaster Response Force (SDRF) & Civil Defence should thoroughly search the affected area for survivors and injured.

In case of heavy flooding and inundation, vehicular access may be restricted and hence suitable rafts/ boats should be used to rescue and evacuate the people affected by the floods.

The waterlogged in low lying residential areas should be pumped out and the pumped-out water could be let through the nearest natural drain or canal. Also, fire engines can be deployed to pump out water from affected areas during emergencies.

Any breach in rivers, streams or natural drains should be protected with adequate sandbags or creation of temporary embankments to avoid further damage to property and human life.

In case of heavy storms, power supply to areas which are in the primary path of the storm can be disconnected to avoid hazards due to breakage of power lines. Provisions should be made to provide generators for temporary power supply to storm affected areas.

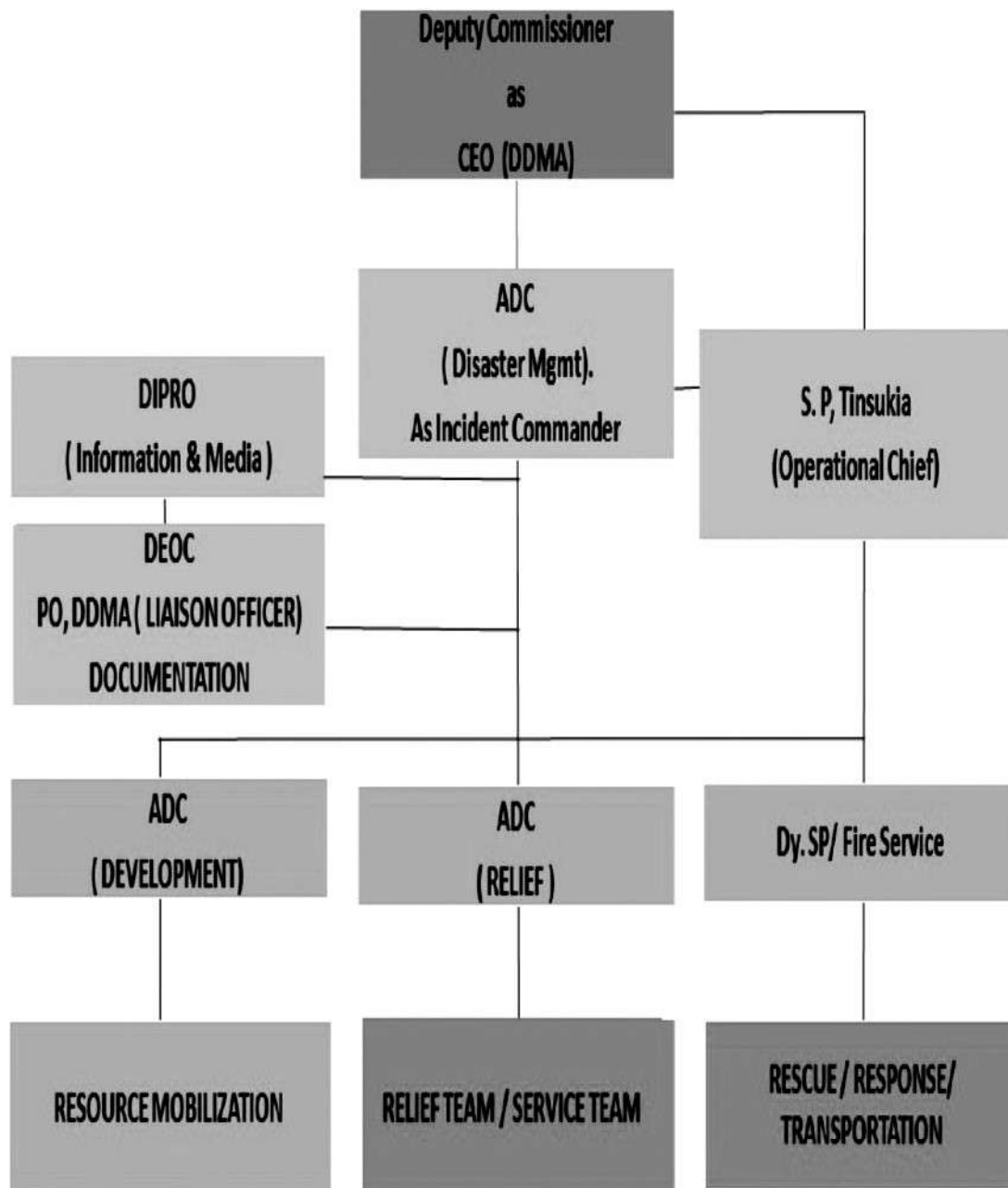
Relief camps should be opened in appropriate locations where a large number of people are affected.

Health facilities like General hospitals and Medical Colleges should be ready to accept crowd in case the primary health centers gets overcrowded.

### **10.5.4 Response Plan**

Response measures are those taken immediately prior to and following disaster impact. It is important to have clear organization structures with established line of authority within the government mechanism to handle the response plan in case of natural calamities. The plan should detail out the various phases from early warning to rehabilitation and the roles that agencies play in reaching the vulnerable and affected to identified disaster support infrastructure located in the Tinsukia region. Response plans include formation of functional teams and providing plans for transportation, evacuation, search and rescue, and rehabilitation. They are supported by supervisory zone-based teams assuring food, shelter, water, medicine to the vulnerable to uphold physical and psychological health. Survey and assessment should be the part of response activity.

**Resource Mobilization during Response:  
District Directorate of Information and Public Relations**





**TABLE NO-59**  
**Response plan at District level**

Sl.No	Response at district level	
1	<p>On receipt of Flood Warning, DDMA will pass the information for taking necessary measures to:</p> <ul style="list-style-type: none"> <li>• The concerned SDO (Civil)</li> <li>• Revenue Circle Officer</li> <li>• Suptd. of Police</li> <li>• Executive Engineer WR Dept.</li> <li>• Executive Engineer, PWD(Roads)</li> <li>• Station Officer-Fire Service Station and I/C of State Disaster Response Force (SDRF)/National Disaster Response Force (NDRF) if stationed in the district.</li> <li>• Deputy Director, F&amp;C Supplies</li> <li>• Jt. Director Health Services</li> <li>• District Veterinary Officer to take necessary measures so that if necessary, assistance can be provided in short notice to the affected areas</li> <li>• DIPRO, if requires giving public announcement for evacuating people from vulnerable areas</li> </ul>	Deputy Commissioner (DC) will direct Addl. DC or CEO, DDMA
2	SP will instruct Senior Station officer, Fire and Emergency Services/SDRF to assist the Circle Officer in rescue, evacuation and relocation processes	Superintendent of Police (SP)
3	Senior Station officer, Fire and Emergency Services will mobilize teams of SDRF and boats available in their custody and coordinate with DDMA/Circle Officer for response.	Snr. Station officer, Fire and Emergency Services
4	Executive Engineer, WR Dept. shall mobilize man material to strengthen weak embankment, keep constant vigil on Water Levels & and take necessary temporary measures to avert any breaches in embankments.	Executive Engineer, WR Dept.
5	Take adequate measures to ensure that the road communication is not disrupted; repair any breaches on roads for evacuation and supply of relief to the affected people.	Executive Engineer, PWD (Roads)
6	Jt. Director Health Services on receipt of information will initiate to mobilize medical response team, ambulances and alert all government hospitals in the area likely to be affected. JD shall also direct SDMHO and I/C PHC of the concerned area to form a team of doctors equipped with necessary medical equipment and move to the affected places or Relief Camp/centre as required by the Circle Officer	Jt. Director Health Services
7	Take periodic report of the situation and instruct Circle Officers, Jt. Director Health Services, Executive Engineers of PWD (Roads), PHE, WR, Irrigation, Police, Fire & Emergency Services to take necessary measures as required for dealing with the situation	Deputy Commissioner
8	Deputy Commissioner will also inform State HQ about the prevailing situation and actions taken	Deputy Commissioner

**TABLE NO-60**  
**Response plan at Circle level**

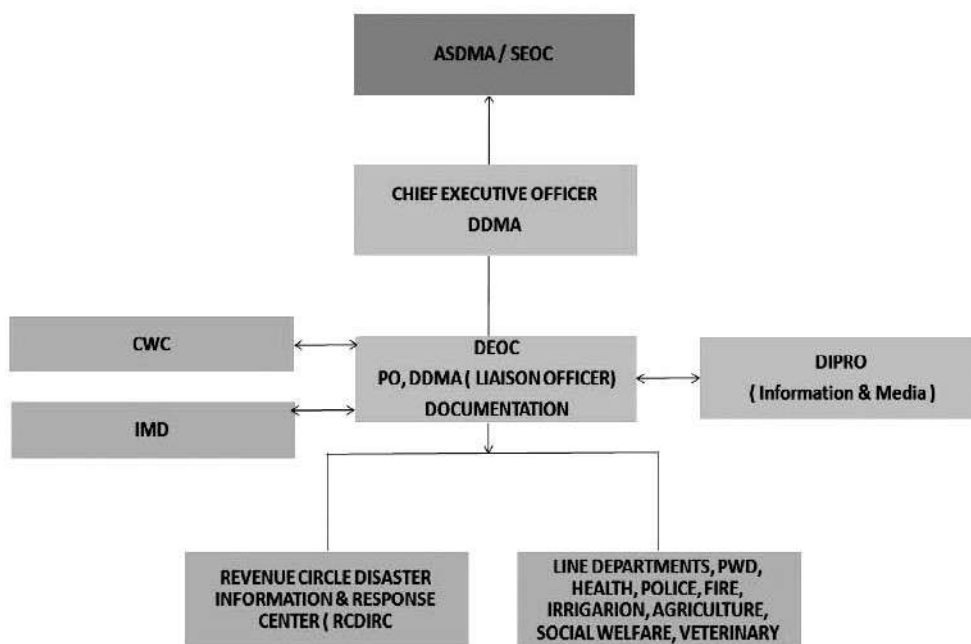
Sl.No	Response at revenue circle level	
1	On receipt of warning, mobilize the Lot Mondal, Gaon Burah, SDRF and other agencies and resources available under Circle Officer's jurisdiction	Circle Officers (COs) of the concerned Revenue Circle
2	Go to the specific location immediately and inform the villagers on the probability of any flood event and ask them to take necessary precautionary measures	Lot Manadal and Gaon Burah, Field Officer (Disaster Management)
3	In case of probability of high intensity flood, evacuation of people from vulnerable areas to pre-identified safe locations and preposition of quick Response Team/SDRF/NDRF/Police Force/Sand Bags/ Boats/Tarpaulin/ Tents)	Circle Officers (COs) of the concerned Revenue Circle, Inland Water Transport (IWT) Dept.
4	Keep DC/SDO (Civil) informed on an hourly basis about the situation on the ground level and may request additional resources of man, material and machines if required from DC or SDO (Civil)	Circle Officers (COs) of the concerned Rev. Circle
5	<b>Inform:</b> Block Development Officer (BDO), so that BDO can inform PRI representatives for appropriate action GP Secretary and GP President for appropriate action	Circle Officers (COs) of the concerned Rev. Circle
6	Open Relief Camps if required and give requisition for GR to DC	Revenue Circle Officer
7	Arrange for distribution of Relief	Revenue Circle Officer

Coordinated IEC activities should be initiated well in advance.

- Mock drill of preparedness should be carried out twice in a year. The mock rehearsal should start from the Control Room. This will help in finding out the preparedness level for the district level functionaries.
- Make separate plan of operation and list of required materials, tools machineries for each kind of disaster.
- Train the rescue forces with the equipments and specialize them for the different types of disaster by the experts.

- Train the Panchayat leaders / village volunteers/ Villagers for helping the affected people for the disaster of their concern.
- Half yearly review the stock of men, materials, and machineries of all lined departments.
- Approach to NDMA and ASDMA for any kind of assistance to the line departments for up-keepmeant of their machineries and strengthening the resources.
- Warning system through Police Control Room (24x7) DDIPR/AIR/DIO.
- The Incident Command Officer shall organize regular coordination meeting with all DM Committee Members, Head of office, Public leaders, NGO and senior citizen in consultation with the Chairman.
- The Incident Command Officer will liaise with all Head of office, NGO, Public Leaders and other organizations to keep their machineries and manpower in readiness to face occurrence of any type of natural disaster.
- The Incident Command Officer shall keep record of all parameter which might
- Indicate occurrence of any type of natural disaster and intimate the concerned higher authority in weekly / daily basis.
- The RRTs (Medical & Police) will be alerted by the Incident Command Officer.

**Flow chart showing the directional of information flow at DEOC**



## **10.6 Relief Plan**

### **10.6.1 During the Disaster.**

Disseminate the warning of disaster from DEOC / DIPRO to all concerned destination in single attempt by using mass sms, announcement through radio, through mass voice mail and ask the people who are likely to be affected, to take shelter in safer places.

Immediate deploy the forces to clear the route of search & rescue and also to clear the traffic from the route of rescue.

Command to the forces, NGO, SHG & volunteers to rush immediately to the affected area for search and rescue with all pre-enlisted tools and equipments for disaster.

During the time of occurrence of disaster, the Nodal Officer shall liaise with all Head of office, Public Leaders and others organizations and initiate prompt measures to prevent loss of human lives and property damage.

The Nodal Officer shall initiate immediate necessary measure for evacuations, organize Search and Rescue teams with consultation with the concerned Member which have been entrusted to this work.

If necessary, the Nodal Officer will initiate setting up of Relief Camp for the affected people in a safer place and ensure proper supply of safe drinking water, electricity, medical facilities and rations etc. with the help of concerned departments to the relief camp.

### **10.6.2 Post Disaster:**

A Post- disaster evaluation should be done after the withdrawal of relief and rehabilitation activities in order to assess :

- The nature of state intervention and support,
- Suitability of the organizational structure,
- Institutional Arrangements,
- Adequacy of Operating Procedures,
- Monitoring mechanism,
- Information tools,
- Equipments,
- Communication System, etc.

The impact studies on the aforesaid operations for long term preventive and mitigation efforts are to be undertaken. Evaluation exercises may be undertaken to understand the perceptions about disaster response in terms of :

- Adequacy of training
- Alert and warning system,
- Control Room functions,
- Communication plans,
- Security,
- Containment,
- Recovery procedures,
- Monitoring

**10.6.3 Relief and Rehabilitation Plan for Flood**

**TABLE NO-61**  
**Relief and Rehabilitation plan for Flood**

Sl.No	Flood	Action to be taken
1	<b>Pre-Flood</b>	<p>Maximum number of relief centres likely to be set up Facilities to be available at each centre</p> <ul style="list-style-type: none"> <li>• Maximum likely number of relief parties The way individuals and voluntary organizations are to be associated with the relief teams.</li> <li>• The way Panchayats will be associated with relief operations. Divide the district into compact zones each comprising a group of villages falling under both 'very vulnerable' and 'vulnerable' areas as classified in DDMP and each such zone shall be serially numbered Select sites for evacuation centres and relief centres in safe areas. The site for sheltering livestock may be decided in consultation with the district A. H. &amp; Veterinary officer. In selecting sites, preference shall be given to high lands, schools, marketplaces, and places not likely to be inundated.</li> <li>• Make a rough estimate of requirements Prepare</li> <li>• A sub-division wise list of officers and staff available for deployment of relief duty as and when called for.</li> <li>• A list of jeeps, buses, trucks and other vehicles for requisition in case of necessity, in consultation with the D.T.O;</li> </ul>
2	<b>During Flood</b>	<p>DDMA will conduct weekly meeting to review flood management during the flood season. On receipt of flood warning D.C will: take action as per Standard Operating Procedure (SOP) prepared by the State On occurrence of Flood the DC will: visit the places of occurrence, ascertain the nature and extent of flood and make prompt operational decisions, ADC ( Relief ) will arrange proper distribution of relief articles received as donation in kind among the deserving affected people through the official and non-official agencies</p> <ul style="list-style-type: none"> <li>• Circle Officer will arrange for taking care of the infirm, destitute, orphans, children, and expectant/nursing mothers in the relief centres through the assistance of the distribution social welfare officer.</li> </ul>
3	<b>Post Flood</b>	<p>DDMA will collect agricultural statistics from the revenue staff and the district agricultural officer about areas under crops affected by flood, damage to crops and the number of cultivators involved.</p> <ul style="list-style-type: none"> <li>• After the flood recedes, a report on losses and damages of each area needs to be submitted the Government in the Revenue &amp; Disaster Management Department in the form as given in Appendix X of Assam Disaster.</li> <li>• Generally, full pictures of relief measures will emerge as soon as the waters have subsided. In declaring closures of relief operation, it will take the approval of the DC and inform all concerned.</li> </ul>

**10.6.4 Recovery**

In the unfortunate event of a natural calamity like a cyclone or flood its important focus on the methods and activities to restore lifeline support physical infrastructure like adequate water supply, power and communication networks, accessibility to the site. These must be the described in the disaster management plan- relief & recovery part.

In the District, the Nodal agency plays direct and active role in relief. The Deputy Commissioner office either directly or through assistance will inform to the nearest police stations, WT stations, administrative officers and nodal agencies at Circle, Sub-Divisional and Dist. HQ by quickest means. For timely assistance to the people affected by natural disasters it is necessary to



have correct assessment of extend of damage to crops, public & private properties and loss of human lives and livestock. The emergency relief measures and relief measures in the aftermath of a disaster is generally carried out in compliance with Calamity Relief Fund Norms by Deputy Commissioner.

The task force is responsible for collecting the extend of the damages with respect to number of houses damaged, loss of human lives, number of person injured, information about individual families, their income, property and assets. The zonal officer has to prepare a report on the same to be sent to the Deputy Commissioner. The mentioned assessment is to be carried out on priority basis so that the Nodal Department in the district Region which is the Department of Disaster Management can extend relief assistance in time in order to mitigate the effect of the natural disaster.

### **10.7 Department roles and responsibilities**

#### **10.7.1 Police department:**

In order to achieve smooth and orderly evacuation of human lives and properties the district Police Department has to play vital role. The Police Department will keep close liaison with Deputy Commissioner/ Addl. Deputy Commissioner (Disaster Management) and the District Emergency Operation Centre (DEOC). The Superintendent of Police will chalk out action plan forming different zones and sectors with Police Zonal & Sector Officers for smooth conduct of rescue and relief operation. The Zonal and Sector Police Officer will keep close liaison with the District Headquarter as well as concerned departments like Fire Service, Civil Defence, Health, Army & Paramilitary, Air Force, Transport, and ensure the following tasks.

- Visit the affected areas and keep informed through wireless system/ telephone etc. about the up-to-date status of the affected areas and prompt actions to be taken for rescue and relief operations.
- Take adequate care for maintaining law & order. They also assist the Civil Administration in times of Disasters
- Round the clock vigil of the area including the high and vulnerable buildings and ensure rescue operations at every affected areas/houses
- Requisition of services of Civil Defence, Homeguards/VDPs and other military/ paramilitary forces in rescue operations 21
- Provide assistance to the community for shifting of affected and injured persons to the health camp for medical treatment.
- Extend support to Fire & Emergency Services in controlling fire incidents and security to individuals and public properties
- Establish emergency communication system
- Extend support to Civil Administration in management of dead

#### **10.7.2 Fire & Emergency Service**

Fire (natural as well as manmade) is one of the major disasters that causes loss of human lives and property. Sometimes not because of earthquake, but because of fire people lose their lives.

Ensure that proper firefighting precautions has been taken while issuing permission for construction of buidings. Make sure that smoke detectors/ fire fighting equipment are installed in all important places like Govt. offices/ schools/ colleges/ cinema halls/ industrial units and other installations where the people gather in large number. Also train up employees about the techniques of using fire fighters

Make sure that sufficient number of fire tenders with all equipments in working condition are available round the clock. Train up/ Motivate people how to use fire fighters and its advantages. Carry out Fire Mock Drill in schools/ public places/ apartments etc. to raise public awareness.

**Table No. 62**

**Detail of Fire tender under State Fire & Emergency Service , Tinsukia**

Sl. No	No of Fire Tenders	Nos
1.	Fire tender 550 ltr capacity	1
2.	Fire tender 4500 Ltr. capacity	2
3.	Fire tender 2000 Ltr. capacity	1
4.	Fire tender 12000 Ltr. Capacity	1

### **10.7.3 State Disaster Response Force Services**

Sometimes not because of fire, but because of flood/earthquake etc. people lose their lives. SDRF People will be in alert mode with all lifesaving equipments/ boat and extend their services as and when required. The will work under the command and control of Sr. Station Officer, Tinsukia Fire & Emergency Services Station.

### **10.7.4 Civil Defence & Home Guard:**

For effective operation, works of various services, personnel must have proper training and discipline with a view to achieve this intensive training with special reference to the earthquake disaster should be arranged to train up the volunteers and 23 other related personnel as well as the public. The efficiency in performance of the various services depends highly upon the amount of training imparted to them. In Civil Defence towns, training with special reference to earthquake are already introduced in educational institutions. It is suggested to conduct some exercises by Civil Defence department, in the rural areas to enlighten the public and students for their action and part played in a disaster. Civil Defence Department will keep a register of trained volunteers so that their services can be utilized in disaster relief operation in respective service. The Deputy Controller of Civil Defence, Tinsukia will properly maintain the equipments necessary for conducting rescue operation to extricate the casualties trap from under debries. He will also ascertain the resources of manpower and materials available with the local Agencies like Home Guard, and other Local voluntary organization such as Indian Red Cross Societies, N.C.C., and Scouts & Guides Etc. Civil Defence and Home Guard, Tinsukia will have to prepare a separate contingency plan for this purpose. They need to spare sufficient numbers of Home Guards for emergency operations as and when called for.

**10.7.5 Health Department:**

The Health Department will make necessary arrangements for blood banks and other lifesaving emergency services. All Hospitals and Private hospital should be on alert. One senior Doctor for emergency duty should be detailed on a round-the-clock basis in the Casualty Ward in these Hospitals. Ambulances with life savings drugs need to be kept in readiness. An inventory of all private ambulances should be prepared along with the names of the drivers and their contact phone numbers.

Provide health and medical care in normal and disaster situations.

Develop adequate health infrastructure in the district and implement programmes towards improvement of health across all sections of the society.

Conduct vulnerability assessment of all health facilities across the district and undertake preparedness and mitigation measures.

- Render immediate medical service and transport casualties to hospitals
- Activate Hospital Disaster Management Plan including mass casualty plan
- Prioritize patient management; Activate triage system as per the established protocol
- Set-up relief camps from District to PHC Level, Medical Colleges.
- Establish a base for field hospitals along with basic/support services
- Maintain Ambulance network
- Establish network among medical practitioners/ health institutions to facilitate quick mobility of Doctors and masscasualty management
- Ensure that emergency communication is functional at all times, including medical services (pharmacy, blood bank, paramedics, ambulance services)
- Conduct training to Hospital Administrators, Doctors, Nurses, Paramedics, and other staff
- Work towards developing a cadre of volunteers trained in basic first-aid
- Provide support in recovery operations
- Carry out impact assessment on health infrastructure
- Provide support to line departments in Recovery and Rehabilitation efforts of the communities
- Provide expert counselling/psychosocial support to disaster survivors
- The Civil hospital, Tinsukia will keep few beds ready for treatment of the referred cases. He will help with manpower and medicines, vehicles and voluntary Blood Donors.
- Document actions taken by the department and incorporate lessons learnt in the sector plan.

**10.7.6 Public Works Department:**

Structural safety of all existing RCC, Steel and masonry buildings needs to be assessed with regards to its safety against potential hazards like earthquake, floods, fires and accidents. The PWD (Bldg.) division has to prepare and provide checklist for regulatory and development authorities.

The PWD (Bldg.) division has to identify vulnerable buildings for seismic safety in compliance with Govt. of India guidelines. They has to create, compile and maintain a database of all weak structures (Govt./ Non-Govt. and lifeline buildings) and provide technical support for the corrective measures to follow like retrofitting/demolishing of such structures.

The PWD (Bldg.) division will provide technical assistance to the DDMA for enforcing BIS codes as applicable in the district. The DDMA may take necessary actions against deviation/ violation of such resistive measures.

PWD (NH) & PWD (State Roads) will make an inventory of the machineries like Bulldozers, Excavators, Cranes etc. necessary for restoration of roads.

Construction and repair of roads, bridges, culverts in the district.

The departmental Engineer should keep vigilance on the NH and all other important road during and immediately after the earthquake and take immediate measures to clear the blockade found anywhere using the required machineries like bulldozers etc.

- Preposition emergency supplies and equipment/tools in high-risk concentration areas
- Establish mitigation funds within the department.
- Undertake damage assessment of lifeline infrastructure; Prepare estimates and undertake repair/ strengthening works; Supervise the civil work activities and ensure safe construction practices are streamlined during Recovery/Reconstruction phase.
- Conduct training for staff in latest advancements of engineering, demolition techniques, health monitoring of infrastructure assets, seismic strengthening and retrofitting, critical infrastructure protection.

**10.7.7 Public Health Engineering Department:**

Water born diseases are one of the major reasons of increasing the number of death after any disaster. Providing purified water to the affected people is a challenge. The PHE department plays a vital role in this regard. Checklists for this department are as follows,

The PHE department, Tinsukia will have to keep sufficient stock of water purification materials like bleaching powder, alum and lime etc. for carrying to the area where necessary and depute their field staff whenever disaster situation claims.

The PHE Engineer staff will keep in constant touch with the Zonal Officers during and after the disaster.

Ensure safe hygiene through Total Sanitation Campaign (TSC). Motivate the people to exercise proper disinfections and hygiene practices for drinking water and taking food.



Undertake risk assessment and management of ground water resources in emergency situations.

#### **10.7.8 Water Resources Department:**

The Water Resource Department will assess and make a list of vulnerable dykes and keep close eye on these areas. Accordingly, they will have to prepare contingency plan to meet any emergency. The Executive Engineer is to check regularly the condition of the sluice gates and do necessary rectifications, if any, so that stagnant water can be discharged effectively. He is responsible for deploying officials/ experts along the dyke/ bundh etc. during the flood period at the vulnerable points and send their contact numbers to DDMA and zonal officers. The WR Department has to keep sufficient number of empty gunny bags, sand and other facilities in the vulnerable reaches. In addition to this they have to deploy strict vigilance over all the major embankments round the clock.

#### **10.7.9 Irrigation Department**

The Executive Engineer is to keep sufficient nos. of portable pump sets ready on 24x7 hourly basis. He will arrange sufficient manpower and assign duties likewise.

#### **10.7.10 Transport Department:**

Proper maintenance/cleanliness of roads during disaster is an important task so that rescue/relief operations, transportation of essential goods & manpower are not affected. A checklist for Transport Department is as under:

The DTO Tinsukia will keep list of owners with contact details of all type of vehicles Excavators, Bull-dozer, Cranes, Recovery Vans Tractors, buses, trucks etc. which can be arranged immediately during and after any disaster. A copy of the same is to be made available to the District Disaster Management Authority.

Arrange vehicles for transport of people and relief supplies, navigation aid.

The Transport Department will have to prepare an Action Plan for supply of the all type of vehicles when required. The DTO would have to keep liaison with the DEOC.

Take up awareness program for road safety (Accident prevention).

#### **10.7.11 Food and Civil Supplies Department**

They are responsible for proper and quick distribution of Civil Supplies at the time need. They will ensure procurement of essential commodities (controlled & noncontrolled) and maintain buffer stock of sufficient quantities to be released during necessity. They are also to issue instructions to the Roller Flour Mills to keep rolling stock of wheat bran/ rice barn and send regularly a list displaying availability of these 28 items. The F&CS department has to keep constant vigil so that traders do not take advantage of the situation creating artificial scarcity of commodities and inflate prices.



**10.7.12 Veterinary Department:**

Disaster causes death and injury to animals also. The veterinary Department with the assistance of NGOs/ volunteers working in this line will organize in such a way that can expeditiously take steps for rescue of seriously injured animals and disposal of dead animals also. District Veterinary Officer will assess requirement of equipment's and other veterinary staff, medicines vaccines disinfectants etc. and prepare an Action Plan to combat the possibilities of injuries and epidemics etc. They will conduct assessment of damage and economic loss due to disasters within the sector.

**10.7.13 Agriculture Department:**

During flood/draught, loss to seasonal crops is considerable. The Agriculture Department is entrusted with provide necessary technical support to the district administration.

Establish coordination in implementing and providing technological know-how on drought management to the farming community through agricultural extension services.

Continue educating farmers on soil and water conservation technologies through implementation of watershed projects and know-how of drought resistant crops.

The Agriculture Department will make an assessment of acreage under crops and number of cultivators to be affected in each of the areas.

They need to assess the requirement of seeds, seedlings, manures etc. for grants, tools and plants for emergency relief works.

They have to advice on the suitable cropping pattern. Arrange for spraying of pesticides wherever necessary.

Make sufficient stock of seeds, manures, implements etc. and make arrangements for raising seedlings.

Arrange distribution of agricultural inputs in consultation with the district administration.

Render technical support to the needy cultivators for salvage and protection of surviving crops.

Repair the damaged tools and plants.

**10.7.14 Social Welfare Department:**

During any disaster the weakest & neglected section of the community viz. women, children, senior citizens, physically handicapped suffer the most. It is the responsibility of our society to protect them.

The Social Welfare Department has to make arrangement for mobile maternity and child welfare centres wherever necessary.

Access the requirement of baby food etc. and arrange them. They have to extend help for taking care of orphan & mother, and the sick.

Maintain in directory of all social welfare organizations located in the district and made it available to the DDMA.

- Alert personnel for floods on receipt of warning and kept constant touch with the district administration All heads of the Departments/Offices will keep constant touch with the District Officials/Disaster Emergency Operation Centre at DC's office. Every department will have to prepare separate Action Plans showing the Standard Operating Procedures (SOPs) to be adopted on emergency and Resource Inventory (human & material) and made it available with the DDMA, Tinsukia.

#### **10.7.15 Inland water Transport**

The Inland Water Transport Department is committed to ensure safe journey to the ferry commuters across the state and cargo transportation through inland waterways on the River Brahmaputra. The IWT also look into the fitness and safety measures in private boats. During the flood they play crucial role in providing relief material in chor areas. The IWT also made an inventory of local boats and create awareness among boats owner's and staff towards disaster preparedness.

#### **10.8 City Disaster Mitigation Plan**

The points mentioned above should be part of a larger city or region level disaster management plan. The Disaster Management Act, 2005 has brought a change from Response & Relief oriented approach to proactive and comprehensive approach. This has encouraged many Indian cities to develop and formulate a City Disaster Management Plan, the same should be worked for Tinsukia MPA as well to enable it to be better prepared in the case of natural disasters in the future. As part of the Master Plan 2041 the authority feels there is a need for a CDMP for the planning area covering the following general principles: -

- Risk & Hazard Assessment
- Planning
- Organization
- Resource Utilization
- Need for Specialist
- Training

Generally, the CDMP prepared for the planning area should include sectoral plans covering the following aspects of disaster & emergency management: -

- Overall Preparedness
- Rehabilitation
- Emergency Response
- Prevention
- Mitigation
- Recovery
- Reconstruction
- Capacity Building Plans

Based on the above discussed general principles a detailed City Disaster Management Plan (CDMP) for Tinsukia Planning Area have to be prepared for strengthening the institutional mechanism.

TABLE NO-63

## ANNEXURE-I

**Actionable points for various line departments**

Sl. No.	Name of line Department/Agency/	Proposal	Action to be under taken towards implementing proposal
1	Tinsukia Municipal Board / Town & Country Planning / Tinsukia Dev. Authority	Affordable Housing Scheme, Solid Waste Management, Construction of vendor & Hawker Market, Bus Stand & Parking, ISBT, ICC, Neighborhood Centre /RLDS, Installation of huge National Flag at Zero Point, Development of Selfie Point, Tourist Information Centre	Line department shall prepare concept paper / DPR whichever is applicable as per directive of the government for consideration of funding under 10% pool fund, NLCPR, NEC, State Finance Commission, CSR Fund of Pvt. Sector etc. in a phased manner during the Master Plan period i.e. up to 2041. A few selected schemes like housing colony can be considered under PPP mode.
2	Public Works Department &Tinsukia Municipal Board	Footpath & cycle Track Road signage in roads and in accident prone area Road Signage & Street Furniture, Fly over	
3	APDCL & Tinsukia Municipal Board	Improvement of street lighting	
4	District Administration and Public Works Department	Integrated DC office / Administrative Block & Judicial court	
5	Public Works Department / NH	Widening of Road, Rotary & Traffic Island	
6	Tinsukia Municipal Board and Town & Country Planning Assam	Development of Drainage system, ETP, FSTP	
7	Tinsukia Municipal Board and Public Health Engineering Department	Improvement of sanitation	
8	PHE Department & Assam Urban Water Supply and Sewerage Board	Water Supply Scheme	
9	Education Department, NGO and Private Agency	Education Facilities	

10	Health Department, NGO and Private Agency	Health Care Facilities	
11	Sports & Youth Welfare Department & Sports Association	Development of playground and construction of stadium	
12	Social Forestry, Tinsukia Municipal Board, Public Administration and NGO	Protection & Conservation of environmentally friendly zone	
13	Social Forestry Department	Roadside Plantation & Urban afforestation	
14	Agriculture Department	Urban Agriculture & Organic Farming	
15	Fire Service	Up - gradation of State Fire Service & intake points in town areas for emergency uses	
16	Transport & Railway Department	Transit Zone, Shifting of Railway track, Fly over, Logistic Hub	
17	DICC	Industrial Estate	
18	Water Resource Deptt.	Sluice Gate	
19	Emergency & Fire service	Fire Hydrant	

Public Meeting held on 22-09-2022 at  
Tinsukia Development Authority Cultural Center, Bordoloi Nagar, Tinsukia



## তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন

তিনিচুকীয়া: আশু বিপ টাৰ, ২২ সেপ্টেম্বৰ। তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত শিল্প আয়োজনা আৰু অনুমোদিত আৱশ্যকীয় নথি (নথি) বিতৰণৰ বাবে আয়োজিত সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া উন্নয়ন আয়োগৰ সভাপতি আৰু সভ্যসকলৰ মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে।

সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে। সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে। সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে।

পৰিকল্পনাৰ আধাৰত সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে। সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে।

পৰিকল্পনাৰ আধাৰত সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে। সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে।

পৰিকল্পনাৰ আধাৰত সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে। সভাখনত অৱস্থিত সকলোৰে মাজে মাজেই তিনিচুকীয়া সৰ্বাংগীণ পৰিকল্পনা, ২০৪১ সন্দৰ্ভত সভা সম্পন্ন হৈছে।

Stakeholders Meeting held on 14-11-2022 at  
Conference Hall, Deputy Commissioner, Tinsukia



## তিনিচুকীয়াত আধাৰিত মাস্তাৰ প্লেণৰ সন্দৰ্ভত সভা

তিনিচুকীয়া: আশু বিপ টাৰ, ১৪ নৱেম্বৰ। নগৰ আৰু গাঁও পৰিকল্পনা উপ-সঞ্চালকৰ কাৰ্যালয় ডিব্ৰুগড়ৰ উদ্যোগত তিনিচুকীয়া, ডিব্ৰুগড়, মাকুম আৰু ডুমডুমাৰ বাবে জি আই এছ আধাৰিত মাস্তাৰ প্লেণৰ ওপৰত সংশ্লিষ্ট বিভাগসমূহৰ সৈতে এখন সভা আজি তিনিচুকীয়া জিলা উপায়ুক্ত কাৰ্যালয়ৰ সভাকক্ষত অনুষ্ঠিত হয়। জিলা উন্নয়ন আয়ুক্ত নয়নজোতি ভাগবতীয়ে তিনিচুকীয়া, মাকুম, ডুমডুমা আৰু ডিব্ৰুগড়ৰ বাবে এক সৰ্বাংগীণ সন্দৰ্ভত মাস্তাৰপ্লেণ প্ৰস্তুতকৰণৰ ক্ষেত্ৰত সকলো সংশ্লিষ্ট বিভাগক অনুৰোধ কৰি সহযোগিতা আগবঢ়াবলৈ আহ্বান জনায়।

তিনিচুকীয়া, মাকুম, ডুমডুমা আৰু ডিব্ৰুগড়ৰ বাবে তৈয়াৰ কৰা মাস্তাৰপ্লেণৰ সৰ্বশেষ সন্মতিত পাবলৈ পইন্ট উপস্থাপন কৰে নগৰ আৰু গাঁও পৰিকল্পনা ডিব্ৰুগড় কাৰ্যালয়ৰ উপ-সঞ্চালক বিশ্বজিৎ ভূঞাই। জিলা উন্নয়ন আয়ুক্ত নয়নজোতি ভাগবতীয়ে পোৰোহিতত তথা অতিৰিক্ত উপায়ুক্ত চন্দ্ৰজ্যোতী হৰুৰ উপস্থিতিত অনুষ্ঠিত এই সভাত পৌৰসভা, লোকনিৰ্মাণ পথ আৰু গৃহ, কৃষি, পৰিবহণ, উদ্যোগ আৰু বাণিজ্য, জলসম্পদ, পঞ্চায়ত আৰু গ্ৰামোন্নয়ন আদি বিভাগৰ বিষয়া তথা প্ৰতিনিধিসকল উপস্থিত আছিল।



**DLC Meeting held on 08-12-2022 at  
Conference Hall, Deputy Commissioner, Tinsukia**



**নগৰ আৰু গাঁও পৰিকল্পনাৰ বাবে জি আই  
এছ আধাৰিত মাপ্তাৰ প্লেনৰ সন্দৰ্ভত বৈঠক**

৭/১২/২০২২

জি আই এছ আৰু গাঁও পৰিকল্পনাৰ উপ-সঞ্চালকৰ  
কাৰ্যালয় তিৰুচীয়াৰ উদ্যোগত তিৰুচীয়া,  
টিলাই, মাকুম আৰু তুমতুমাৰ বাবে জি আই  
এছ আধাৰিত মাপ্তাৰ প্লেনৰ সন্দৰ্ভত  
অংশীদাৰসকলৰ সৈতে দ্বিতীয়খন বৈঠক  
আজি তিৰুচীয়া জিলা উপায়ুক্ত কাৰ্যালয়ৰ  
সভাকক্ষত অনুষ্ঠিত হয়। জিলা উপায়ুক্ত  
নৰসিং পৰাশৰীয়ে এখন বিকশিত চহৰত যিখিনি  
স্বা-সুবিধা দাৰ্শনিকৰ দ্বাৰা সেৱা দিয়া সাক্ষৰি এখন  
সংগঠনৰ মাপ্তাৰ প্লেন প্ৰস্তুত কৰিবলৈ  
আহ্বান জনায়। মাপ্তাৰ প্লেন প্ৰস্তুতকৰণৰ  
সময়ত নৰসিং তথা বাহাৰী নিৰ্মাণত বিশেষজ্ঞৰ  
ওকতৰ দিবলৈ জিলা উপায়ুক্তগৰাকীয়ে  
পৰামৰ্শ আগবঢ়ায়। উপায়ুক্ত নৰসিং পৰাশৰীয়ে  
এই ক্ষেত্ৰত সংশ্লিষ্ট বিভাগসমূহ আৰু  
অংশীদাৰসকলক তৎকালীনভাৱে নিজ মত  
আগবঢ়াবলৈ কয়। তিৰুচীয়া, মাকুম,  
তুমতুমা আৰু তিলাইৰ বাবে তৈয়াৰ কৰা মাপ্তাৰ  
প্লেনৰ সবিশেষ স্পষ্টভাৱে পাবাৰপই শ্রুতি  
উপস্থাপন কৰে নগৰ আৰু গাঁও পৰিকল্পনা  
চিহ্নপত্ৰ কাৰ্যালয়ৰ উপ-সঞ্চালক বিজয়  
ভূঞাই। জিলা উপায়ুক্ত নৰসিং পৰাশৰীয়ে  
সম্মাননাত অনুষ্ঠিত এই বৈঠকত তিৰুচীয়া  
উদ্যম প্ৰসিক্ৰমণ, পৌৰসভা, পোশনিমাণ পথ  
আৰু গুৰু, বিদ্যুৎ, কৃষি, পৰিকল্পনা, উদ্যোগ আৰু  
বাণিজ্য, জলসম্পদ, পৰ্যায়ভিত্তিক আৰু জলসম্পদ  
আদি পিছৰী সংশ্লিষ্ট বিভাগৰ বিষয়া তথা  
প্ৰতিনিধিসকল উপস্থিত থাকিব পাৰে।  
অতিৰিক্ত উপায়ুক্ত বীণু কুমাৰ ডেকা,  
অতিৰিক্ত উপায়ুক্ত চন্দ্ৰনাথ বৰুৱা, তিৰুচীয়া  
উদ্যম প্ৰসিক্ৰমণ সভাপতি কাজল খোৱাই  
উপস্থিত আছিল।



**Advisory Council meeting dated 10<sup>th</sup> March, 2023 at the  
Conference Hall of Hon'ble Minister, DoHUA, Govt. of Assam**

